

MOLECULAR BIOLOGY NEWSLETTER



Georg-August-Universität Göttingen · International Max Planck Research School

Welcome message

Dear alumni, students, friends and colleagues,

It has been an emotional and joyful start into the academic year 2022/23, returning to an almost normal life on campus with our annual Horizons symposium being held in person – finally! The dedicated team of student-organizers did, once again, a wonderful job and our newcomers had the great opportunity to immerse themselves in the scientific community immediately after their arrival. During the orientation week, we could also continue our cherished

nally being able again to interact in person with friends and colleagues. Our PhD representatives engaged in the organization of a picnic and much-appreciated events such as guided tours to the new Göttingen science museum Forum Wissen or the MPI for Solar System Research.

The return of our monthly Culture Nights was also awaited by many and we counted more than 50 volunteers participating in the annual planning session in October. Before the pandemic, we had a small budget with which we could cover the costs for rooms, drinks, the buffet and

decoration. Now we are dependent on donations in order to be able to continue the Culture Nights free of charge and started,

in close collaboration with Alumni Göttingen e.V., a call for donations among our alumni and faculty members.

Our mission for the current academic year is to take some pressure off the shoulders of our first-year students by creating some free space between the lab rotations, having both tutorials (a bit shorter than before) on Friday to make Thursdays more flexible, combining seminar presentations in blocks with sufficient breaks in between, and relaunching our mentoring program with a revised matching concept. A newly designed self-management course in March will support our newcomers in taking well-informed decisions. Along the same line, the Molbio and Neuro coordinators together with the head of our Career Service, Stefanie Klug, met with the current



Newly designed Molbio homepage (www.gpmolbio.uni-goettingen.de).

tradition to take all Molbios and Neuros on an excursion to the Grenzland-museum in Teistungen, followed by lively interactions over dinner.

The pandemic demonstrated very clearly how important social interactions and networking are for our Molbio community. Earlier in the year, almost 60 Molbio students joined us at our summer PhD retreat at the Harnack-Haus in Berlin-Dahlem, this time with the much appreciated financial support of the Max Planck Foundation. To acknowledge the COVID-related uncertainties, we created our “Molbio bubble”, travelling by bus with everyone tested the day before, having our social activities and guided tours in walking distance, enjoying an open-air poster session and fun parties at night. Everyone could sense the Molbio spirit, fi-

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MSc thesis students to advise on study plans and the next career steps. To support career planning of our PhD students, the 4th cycle of our alumni mentoring program was launched recently.

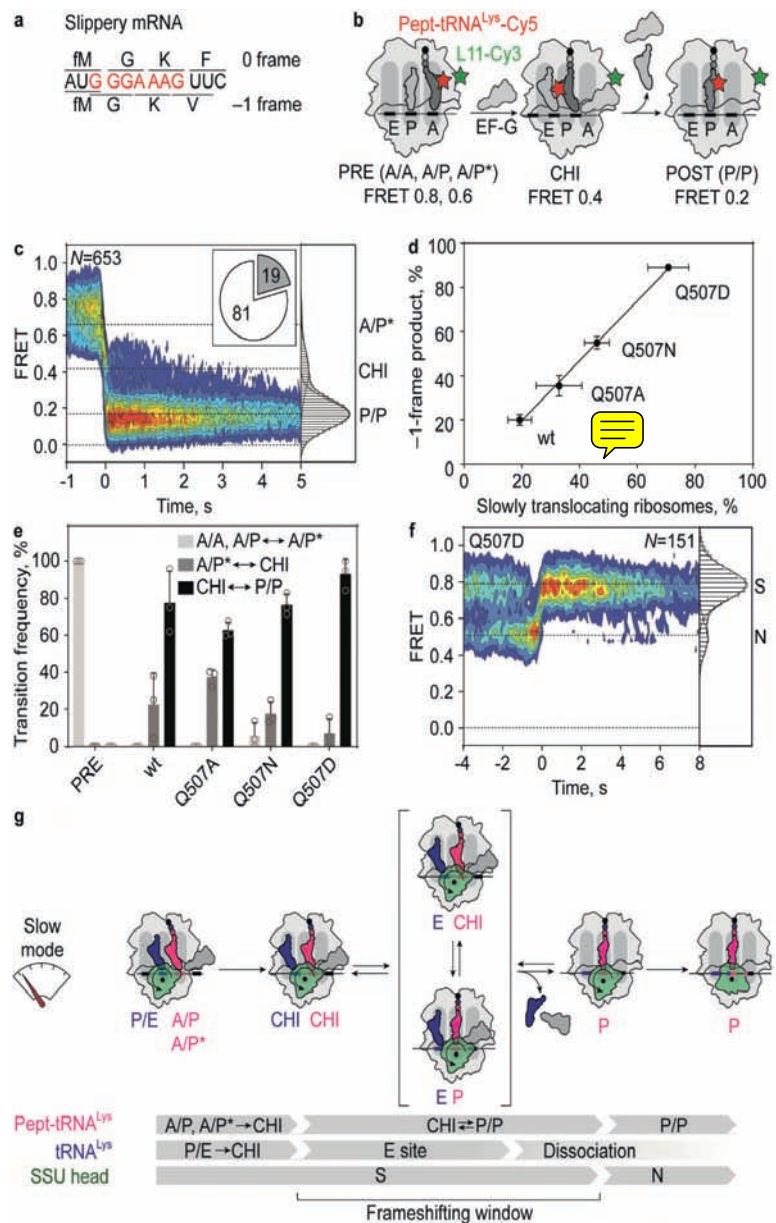
The well-being of our students is also addressed by the continuation of our stress check-ups for PhD students as individual coaching sessions with an occupational psychologist. We received very positive feedback from all participants (50% of our PhD students signed up) after we started this pilot project last year. The personal counselling sessions offered by Steffen to all Molbio PhD students have also been appreciated by many and will continue on an annual basis. We look forward to seeing our program grow further and hope you all enjoyed our new website.

Peter Rehling, Marina Rodnina, Steffen Burkhardt

Altered tRNA choreography...

The ribosome is the molecular machine that synthesizes proteins using mRNAs as templates. The reading of the mRNA by ribosomes occurs in nucleotide triplets (codons) recognized by adaptor tRNAs. To synthesize the correct protein, the ribosome moves one codon at a time across the mRNA to maintain the translational reading frame. However, slippery mRNA sequences allow the same tRNAs to base pair with codons in the initial frame (0-frame) or shift one nucleotide to the mRNA 5' direction (-1-frame; Fig. 1a).

Fig. 1: Translocation choreography during spontaneous frameshifting. (a) The slippery mRNA sequence used in this study. (b) Schematic of translocation monitored by smFRET between peptidyl-tRNA-Cy5 (red) and L11-Cy3 (green). (c) Contour plot and histogram showing FRET distribution during peptidyl-tRNA translocation on slippery mRNA. (d) Correlation between frameshifting efficiency and the fraction of slowly translocating ribosomes during translocation on slippery mRNA by Q507 mutants and EF-G(wt). (e) Transition frequency between FRET states during translocation on slippery mRNA. (f) Contour plot showing FRET distribution corresponding to SSU head swiveling during translocation on slippery mRNA by EF-G(Q507D). N, non-swiveled; S, swiveled. (g) Model of slow frameshifting-prone mode of translocation on slippery mRNA.



PhD- and MSc-related publications 2022 (current and former students of the Molecular Biology program in bold type)

Agirrezabala X, Samatova E, **Macher M**, **Liutkute M**, Maiti M, Gil-Carton D, Novacek J, Valle M, **Rodnina MV** (2022) A switch from alpha-helical to beta-strand conformation during co-translational protein folding. EMBO J 414, e109175

Bhatta A, **Hillen HS** (2022) Structural and mechanistic basis of RNA processing by protein-only ribonuclease P enzymes. Trend Biochem Sci 47(11), 965-977

Bohnsack KE, **Kleiber N**, **Lemus-Diaz N**, **Bohnsack MT** (2022) Roles and dynamics of 3-methylcytidine in cellular RNAs. Trend Biochem Sci 47(7), 596-608

...makes the ribosome slip

Such spontaneous frameshifting leads to production of aberrant toxic peptides. Surprisingly, slippery sequences are abundant in coding genomes, triggering the question how the ribosome maintains (or loses) the reading frame when it encounters such error-prone sequences during elongation.

Frameshifting mainly occurs during translocation, i.e. the movement of tRNAs and mRNA through the ribosome catalyzed by elongation factor G (EF-G). Thus, we followed the tRNA trajectories during translocation on slippery mRNA using FRET between fluorescent reporters at strategic positions on the ribosome at single-molecule level. First, we followed the trajectory of peptidyl-tRNA from the A to the P site on slippery mRNA (Fig. 1b). Translocation is rapid for the majority of ribosomes. However, for a small percentage, the peptidyl-tRNA translocates slowly via intermediate FRET state corresponding to the chimeric (CHI) tRNA conformation, a crucial translocation intermediate (Fig. 1c). Using frameshifting-promoting EF-G(Q507) mutants, we observed that the fraction of slowly translocating ribosomes correlates with the frameshifting efficiency (Fig. 1d). Indeed, a dual FRET pair showed that slow peptidyl-tRNA translocation precedes the arrival of the

–1-frame tRNA. During slow translocation, fluctuations between CHI and the post-translocation P/P state are increased, indicating that peptidyl-tRNA is trapped after CHI but prior to stabilization in the P site (Fig. 1e). In contrast, the deacylated tRNA trajectory is not affected by the slippery sequence or EF-G mutants. Thus, frameshifting is characterized by uncoupled tRNA movement: while the deacylated tRNA dissociates rapidly from the ribosome, the peptidyl-tRNA is trapped in fluctuations between CHI and P/P states. To explain this uncoupling, we followed the swiveling motion of the small ribosomal subunit (SSU) head during translocation: forward swiveling drives tRNA movement, while back swiveling locks the peptidyl-tRNA in the P site. Indeed, frameshifting-promoting EF-G mutants fail to induce the back swivel-

ing of the SSU head (Fig. 1f).

Our data show how altered choreography of translocation leads to frameshifting: on slow ribosomes, both tRNAs rapidly move into their respective CHI states (Fig. 1g). Deacylated tRNA is then rapidly released from the ribosome (Fig. 1g). Normally, peptidyl-tRNA becomes locked in the P site upon backward swiveling of the SSU head. On the slippery sequence, the locking is delayed and peptidyl-tRNA fluctuates between CHI and P/P states (Fig. 1g). These continuing fluctuations provide the time window for peptidyl-tRNA to switch to the –1-frame. Apparently, specific sequences can cause ribosomes to deviate from the designated route and change into alternative pathways. Future work will elucidate the physiological importance of such alternative pathways.

Panagiotis (Panos) Poulis completed his doctoral research in October 2022 in the department of Marina Rodnina at the Max Planck Institute for Multidisciplinary Sciences, where he currently works as a postdoctoral researcher.

These results were published in Poulis P, Patel A, Rodnina MV, Adio S (2022) Nat Commun 13(1), 4231



Chang HF, Schirra C, **Ninov M**, Hahn U, Ravichandran K, Krause E, Becherer U, Balint S, Harkiolaki M, **Urlaub H**, Valitutti S, Baldari CT, Dustin ML, **Jahn R**, Rettig J (2022) Identification of distinct cytotoxic granules as the origin of supramolecular attack particles in T lymphocytes. Nat Commun 13(1), 1029

Cheng S*, **Altmepfen G***, So C, Welp LM, Penir S, Ruhwedel T, Menelaou K, **Harasimov K**, Stützer A, Blayney M, Elder K, Möbius W, **Urlaub H**, **Schuh M** (2022) Mammalian oocytes store mRNAs in a mitochondria-associated membraneless compartment. Science 378(6617), eabq4835 *Co-first authors

Eckermann KN, Dippel S, **KaramiNejadRanjbar M**, Ahmed HM, Curriel IM, **Wimmer EA** (2022) Perspective on the combined use of an independent transgenic sexing and a multifactorial reproductive sterility system to avoid resistance development against transgenic Sterile Insect Technique approaches (vol 15 17 2014). BMC Genom Data 23(1), 32

Decorated tRNAs for...

RNA molecules in the cellular environment can be decorated with several post-transcriptional modifications across all domains of life. In fact, almost all RNA types can be decorated with specific modifications often conserved throughout evolution. Such modifications have been implicated in regulating structure, stability, localization, and function of RNA molecules both directly and by modulating RNA-protein interactions. Nevertheless, several of their biological roles have remained obscure due to lacking apparent phenotypes or because we have no knowledge of the enzymes responsible for installing them, i.e., their “writer” proteins.

Transfer (t)RNAs are the most extensively modified RNA class, accounting for more than half of all known modification sites. In tRNAs, the introduction of base and/or ribose modifications is an important part of the maturation process, influencing folding and stabilization of their tertiary structure. Interestingly, modifications in the anticodon loop of the tRNA can have regulatory roles, such as improving decoding accuracy and preventing frameshifting events.

The significance of tRNA modifications is further emphasized by several

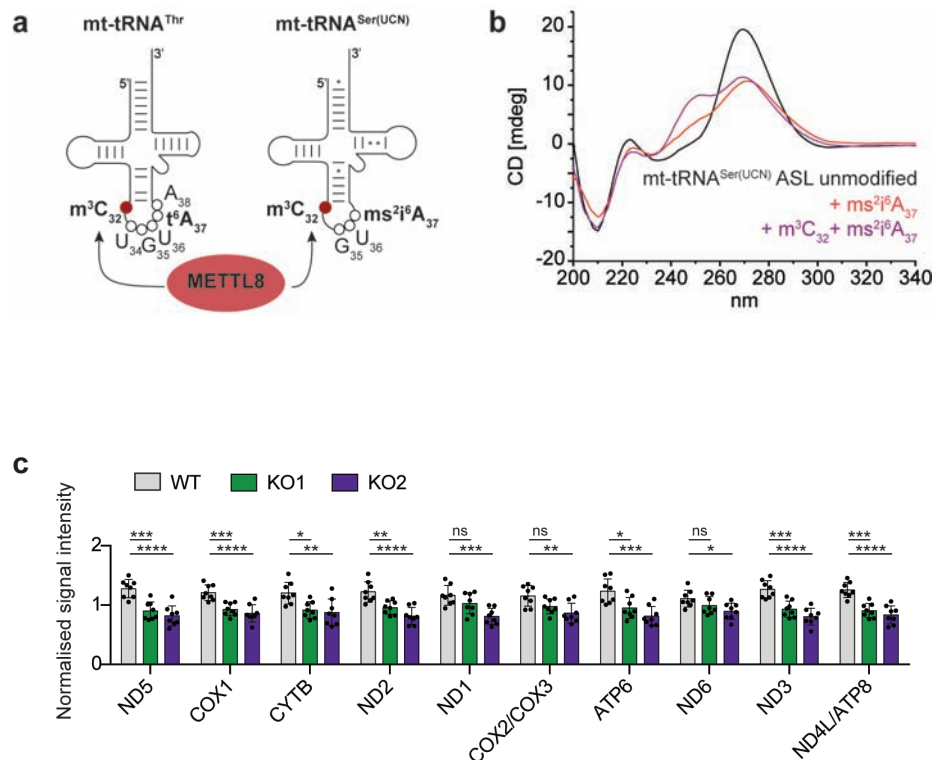


Fig. 1: (A) Schemes of mt-tRNA^{Thr} (left) and mt-tRNA^{Ser(UCN)} (right) - substrates of METTL8. m³C₃₂ is indicated in red, nucleotides required for methylation are marked with circles and respective A₃₇ modifications are indicated in bold. **(B)** Circular Dichroism (CD) spectra of synthetic anticodon stem loops of mt-tRNA^{Ser(UCN)} unmodified, ms²i⁶A₃₇-containing or doubly modified were recorded to observe conformational differences. **(C)** Relative levels of the nascent mitochondrial proteins labelled with [³⁵S]-methionine in wild type (WT) and METTL8 knockout (KO1 and KO2) cell lines.

Farkas A, Urlaub H, Bohnsack KE, Schwappach B (2022) Regulated targeting of the monotopic hairpin membrane protein Erg1 requires the GET pathway. *J Cell Biol* 221(6), e202201036

Giansanti C, Manzini V, Dickmanns A, Dickmanns A, Palumbieri MD, Sanchi A, Kienle SM, Rieth S, Scheffner M, Lopes M, Dobbelsstein M (2022) MDM2 binds and ubiquitinates PARP1 to enhance DNA replication fork progression. *Cell Rep* 39(9), 110879

Günenc AN, Graf B, Stark H, Chari A (2022) Fatty Acid Synthase: Structure, Function, and Regulation. *Subcell Biochem* 99, 1-33

...optimal mitochondrial translation

human diseases that are linked to either mutations in tRNA sequences that impair modification or defects in their respective writer proteins.

One modification that has recently attracted attention is the methylation of N3 of cytidine (m^3C) at position 32 in the anticodon loop of a subset of cellular tRNAs. This methylation is conserved in eukaryotic tRNAs, but little was known about its precise functions and how it is installed in mitochondrial (mt-)tRNAs.

Recently, we identified the methyltransferase METTL8 as the protein responsible for introducing m^3C_{32} modifications in both mt-tRNA^{Thr} and mt-tRNA^{Ser(UCN)}. Using UV crosslinking and analysis of cDNA (CRAC) we found that METTL8 interacts similarly with all mt-tRNAs in human cells. In addition, fluorescence anisotropy experiments revealed that METTL8 robustly binds RNA and shows no preference for its substrate mt-tRNAs *in vitro*.

This raised the question of how METTL8 would distinguish and methylate only the two m^3C -containing mt-tRNAs. And so, through *in vitro* methylation assays using tRNA transcripts and chemically synthesized

anticodon stem loops, we dissected how this protein recognizes its substrates. Namely, we identified that the sequence context in the anticodon loop and the presence of specific modifications at adenosine 37 were key specificity determinants for m^3C_{32} installation (Fig.1A).

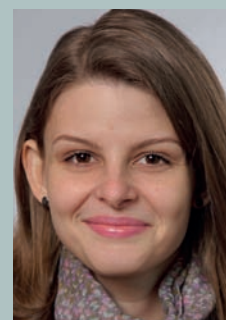
Characterizing METTL8 as the methyltransferase responsible for m^3C_{32} in mt-tRNAs enabled us to explore the functional relevance of this modification. Intriguingly, we found that endogenous mt-tRNAs lacking m^3C_{32} exhibited different migration patterns in native gel electrophoresis when compared to fully modified mt-tRNAs. Further conformational analysis of unmodified, m^3C -containing and/or A₃₇-modified oligonucleotides also supported m^3C_{32} -dependent al-

terations in the anticodon stem loop structure (Fig.1B).

While this modification did not seem to affect the stability or aminoacylation of these two mt-tRNAs, by using [³⁵S]-methionine incorporation, we found that the translation of nascent mitochondrial proteins was affected in cells lacking m^3C_{32} in mt-tRNAs (Fig.1C). Although the specific mechanistic and structural basis of the formation of m^3C_{32} are not completely understood, we hope that our findings will help us better understand the RNA modification landscape.

Nicole Kleiber is a doctoral researcher in the group of Markus Bohnsack at the University Medical Center Göttingen.

These results were published in Kleiber N, Lemus-Diaz N, Stiller C, Heinrichs M, Mai MMQ, Hackert P, Richter-Dennerlein R, Höbartner C, Bohnsack KE, Bohnsack MT (2022) Nat Commun 13(1), 209



Henningsson KM, **Manzini V**, Magerhans A, Gerber S, Dobbelstein M (2022) MDM2-Driven Ubiquitination Rapidly Removes p53 from Its Cognate Promoters. Biomolecules 12(1), 22

Jäger N, Ayyub SA, **Korniy N**, Peske F, Hoffmann M, Rodnina MV, Pöhlmann S (2022) Mutagenic Analysis of the HIV Restriction Factor Shiftless. Viruses (Basel) 14(7), 1454

Glowacki SK, Agui-Gonzalez P, **Sograte-Idrissi S**, Jähne S, Opazo F, Phan NTN, Rizzoli SO (2022) An iodine-containing probe as a tool for molecular detection in secondary ion mass spectrometry. Chem Commun 58(54), 7558-7561

Hairpin protein substrates of the GET pathway

A significant portion of membrane proteins are inserted into the ER membrane co-translationally. However, tail-anchored (TA) proteins, which carry a single hydrophobic transmembrane domain (TMD) at their C-terminus, can be inserted post-translationally

via the evolutionarily conserved GET pathway. Within the GET pathway, the central cytosolic component Get3 acts as a key chaperone for the TMD. Recent studies have not only identified further membrane protein targeting pathways, for example, involving

the Snd proteins and the EMC complex, but also found considerable redundancy between them. Thus, we asked whether the GET pathway could also be responsible for the membrane targeting of proteins other than canonical TA clients.

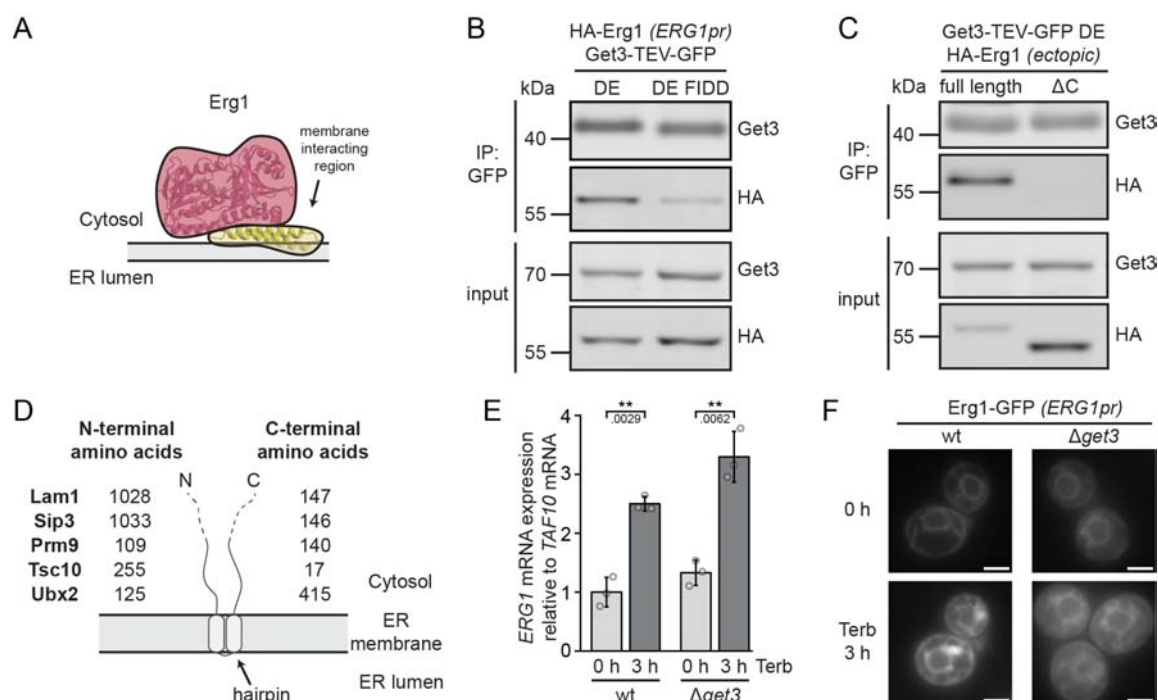


Fig. 1: Hairpin proteins are GET pathway clients and the GET pathway is required for targeting the pulse of Erg1 expressed in response to sterol depletion. **(A)** Schematic illustration of Erg1 topology. **(B-C)** Immunoprecipitation of Get3-GFP DE and DE FIDD. **(D)** Schematic representation of the topology of hairpin proteins mislocalized in the absence of Get3. **(E)** RT-qPCR measurement of the expression level of the ERG1 mRNA before and after terbinafine treatment. **(F)** Microscopy of Erg1-GFP in wt and $\Delta get3$ before and after terbinafine treatment. Scale bars represent 2 μ m. Adapted from Farkas *et al.*, 2022.

Karki P, Carney TD, Maracci C, Yatsenko AS, Shcherbata HR, Rodnina MV (2022) Tissue-specific regulation of translational readthrough tunes functions of the traffic jam transcription factor. *Nucleic Acids Res* 50(11), 6001-6019

Kleiber N, Lemus-Diaz N, Stiller C, Heinrichs M, Mai MMQ, Hackert P, Richter-Dennerlein R, Höbartner C, Bohnsack KE, Bohnsack MT (2022) The RNA methyltransferase METTL8 installs m(3)C(32) in mitochondrial tRNAs(Thr/Ser(UCN)) to optimise tRNA structure and mitochondrial translation. *Nat Commun* 13(1), 209

Oleksiievets N, Sargsyan Y, Thiele JC, Mougios N, Sograte-Idrissi S, Nevskiy O, Gregor I, Opazo F, Thoms S, Enderlein J, Tsukanov R (2022) Fluorescence lifetime DNA-PAINT for multiplexed super-resolution imaging of cells. *Commun Biol* 5, 38

Using high-throughput microscopy-based baker's yeast library screens, we identified a non-TA Get3 client, Erg1, which contains two amphipathic helices at its C-terminus (Fig 1A). These form a hairpin that can submerge in the ER membrane without passing through it, enabling Erg1 to assume a monotopic topology. Of note, Erg1 is an evolutionarily highly conserved protein, which is responsible for a key step of sterol synthesis in both yeast and humans, and is the target of the antifungal drug terbinafine.

Erg1 interacts with Get3 as a targeting substrate, as Erg1 co-elutes with a substrate-trapping mutant of Get3 (DE) after immunoprecipitation (Fig 1B), unless the substrate-interacting region of Get3 is disrupted (DE FIDD). We also verified that this interaction requires the hairpin of Erg1 (Fig 1C), suggesting that the hairpin serves as the recognition motif within Erg1 for Get3.

In our microscopy-based yeast screens, we also identified further hairpin-containing proteins that mislocalized from the ER to the cytosol or mitochondria upon loss of Get3 (Fig 1D), which indicates that Get3 can serve as the targeting pathway for several

hairpin proteins and not just Erg1. Interestingly, the hairpin is not located at the C-terminus of the majority of these proteins, implying that Get3 can recognize targeting motifs upstream of the C-terminus of proteins.

Although Erg1 is an essential protein and requires Get3 to reach the ER membrane to a significant extent, Get3 only becomes essential under stress conditions, for instance during sterol depletion induced by treatment with terbinafine, the inhibitor of Erg1. Terbinafine treatment induces an increase in ERG1 mRNA synthesis (Fig 1E), which leads to a biogenetic pulse of Erg1 as evidenced by microscopy of yeast strains expressing Erg1-GFP (Fig 1F), and thus allows the survival of the yeast cells. At the same time, this experiment

provided an answer to the question why Get3 is essential under these conditions; in the absence of Get3, a significant portion of the Erg1-GFP generated during the biogenetic pulse fails to reach the ER, as evidenced by the strong cytosolic staining in cells lacking Get3 (Fig 1F).

In summary, our study expands our knowledge of the client spectrum of Get3. It also highlights the necessity to consider the expression kinetics of client proteins when studying pathway dependency during membrane protein biogenesis, and thus contributes to a better understanding of roles different targeting pathways play under *in vivo* relevant conditions.

Ákos Farkas completed his doctoral research in November 2019 in the department of Blanche Schwappach at the University Medical Center Göttingen, where he currently works as a postdoctoral researcher.

These results were published in Farkas A, Urlaub H, Bohnsack KE, Schwappach B (2022) J Cell Biol 221(6), e202201036



Patron M, **Tarasenko D**, Nolte H, Kroczeck L, Ghosh M, Ohba Y, Lasarzewski Y, Ahmadi ZA, Cabrera-Orefice A, Eyiam A, Kellermann T, Rugarli El, Brandt U, Meinecke M, Langer T (2022) Regulation of mitochondrial proteostasis by the proton gradient. EMBO J 41(16), e110476

Poulis P, Patel A, Rodnina MV, Adio S (2022) Altered tRNA dynamics during translocation on slippery mRNA as determinant of spontaneous ribosome frameshifting. Nat Commun 13(1), 4231

So C, Menelaou K, Uraji J, **Harasimov K**, Steyer AM, Seres KB, Bucevicius J, Lukinavicius G, Möbius W, Sibold C, Tandler-Schneider A, Eckel H, Moltrecht R, Blayney M, Elder K, Schuh M (2022) Mechanism of spindle pole organization and instability in human oocytes. Science 375(6581), 631

Oocyte matrix reloaded

Mammalian oocytes load mRNAs into a mitochondria-associated hydrogel-like matrix

Transcription ceases during the final stages of oocyte growth in mammals. Storage of messenger RNAs (mRNAs) is crucial to ensure correct oocyte maturation and early embryonic development. Because mRNAs are not replenished by transcription in fully grown oocytes, the maternal mRNA pool that is synthesized during oocyte growth has to be maintained. After successful fertilization, the embryonic genome is activated and

the maternal mRNAs are replaced by mRNAs transcribed from the embryonic genome. A premature loss of maternal mRNAs impairs proper embryonic development.

Non-mammalian oocytes (e.g. oocytes of *Caenorhabditis elegans* or *Drosophila melanogaster*) contain dedicated membraneless compartments to store maternal mRNAs. These membraneless compartments

are formed by phase separation of RNAs and RNA-binding proteins.

In this study, we aimed to investigate whether similar structures exist in mammalian oocytes. We first analyzed the localization of RNA-binding proteins that are highly expressed in mouse oocytes. We found that the proteins ZAR1, YBX2, DDX6, LSM14B, and 4E-T (EIF4E-NIF1) co-localized with mitochondria

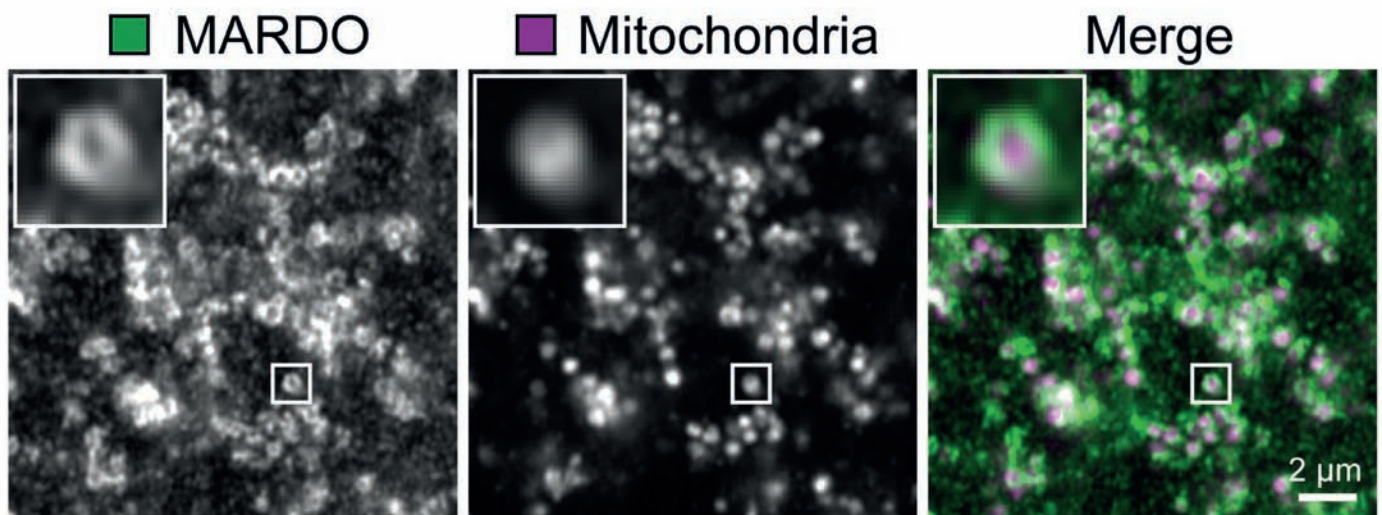


Fig. 1: The MARDO in a mouse oocyte. The MARDO labelled by ZAR1 (green) assembles around mitochondria labelled with cytochrome c (magenta). The MARDO and mitochondria form clusters. Insets show magnifications of the outlined regions. Scale bar 2 μm. These results are published in Cheng et al., 2022

Ulrich K, **Farkas A**, Chan OLV, Katamanin O, Schwappach B, Jakob U (2022) From guide to guard-activation mechanism of the stress-sensing chaperone Get3. Mol Cell 82(17), 3226

Werner M, **Dyas A**, Parfentev I, Schmidt GE, Mieczkowska IK, Müller-Kirschbaum LC, Müller C, Kalkhof S, Reinhardt O, Urlaub H, Alves F, Gallwas J, Prokakis E, Wegwitz F (2022) ROBO3s: a novel ROBO3 short isoform promoting breast cancer aggressiveness. Cell Death Dis 13, 762

dria. The analyzed proteins formed a hydrogel-like matrix around the mitochondria. Overexpression of ZAR1, but not of other RNA-binding proteins, caused the mitochondria to coalesce into large clusters.

To find out whether the mitochondrial clusters form an mRNA storage compartment, RNA fluorescence *in situ* hybridization (RNA-FISH) was performed, and revealed co-localization of maternal mRNAs and the mitochondrial clusters. Based on its unique properties, we named the structure **mitochondria-associated ribonucleoprotein domain (MARDO)**. The MARDO was also identified in oocytes of other mammalian species, including bovine, porcine and human oocytes, and is hence widely conserved.

To further investigate the role of ZAR1 in MARDO assembly, depletion and rescue experiments were performed. Depletion of ZAR1 caused MARDO disassembly, whereas injection of Zar1 mRNA into ZAR1-deficient mouse oocytes could restore MARDO assembly.

Next, the function of the MARDO was analyzed in the context of mRNA storage. RNA sequencing

(RNA-seq) of Zar1-knockout oocytes in combination with single-molecule RNA FISH identified mRNAs that are stored in the MARDO. Depletion of ZAR1 not only caused the disassembly of the MARDO but also caused a premature loss of some of the MARDO localized mRNAs. We additionally showed that mRNAs in the MARDO are translationally repressed. During oocyte maturation, the MARDO eventually dissolved, concomitant with the removal of the stored mRNAs. MARDO disassembly was driven by proteasome-mediated degradation of ZAR1.

In summary, these results identify a new membraneless mRNA storage compartment in mammalian oocytes, called MARDO. The MARDO

regulates storage, translation, and degradation of maternal mRNAs. One of the key proteins of the MARDO is ZAR1, the expression and degradation of which are essential for MARDO assembly during oocyte growth and dissolution during oocyte maturation, respectively. The functions of other MARDO-localized RNA-binding proteins remain to be determined.

Gerrit Altmeppen completed his doctoral research in March 2022 in the department of Melina Schuh at the Max Planck Institute for Multidisciplinary Sciences. Since September 2022 he works as Capabilities & Insights Analyst for McKinsey & Company.

These results were published in Cheng S*, Altmeppen G*, So C, Welp LM, Penir S, Ruhwedel T, Menelaou K, Harasimov K, Stützer A, Blayney M, Elder K, Möbius W, Urlaub H, Schuh M (2022) *Science* 378(6617), eabq4835 *Co-first authors



Wohlfarter Y, Eidelpes R, **Yu RD**, Sailer S, Koch J, Karall D, Scholl-Burgi S, Amberger A, Hillen HS, Zschocke J, Keller MA (2022) Lost in promiscuity? An evolutionary and biochemical evaluation of HSD10 function in cardiolipin metabolism. *Cell Mol Life Sci* 79(11), 562

Yi SH, **Petrychenko V**, Schliep JE, **Goyal A**, Linden A, Chari A, Urlaub H, Stark H, Rodnina MV, Adio S, Fischer N (2022) Conformational rearrangements upon start codon recognition in human 48S translation initiation complex. *Nucleic Acids Res* 50(9), 5282-5298

Students

Master's class of 2022/23

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Bahçesehir University
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<https://www.uni-goettingen.de/en/666381.html>

**Resul Gökberk Elgin**

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Izmir Institute of Technology (IZTECH)
Bachelor of Science
Molecular Biology and Genetics

<https://www.uni-goettingen.de/en/666395.html>

**Sara Ahrari**

Iran
University of Tehran
Bachelor of Science
Molecular Biology, Genetics, Cell Biology,
Bioinformatics

<https://www.uni-goettingen.de/en/666382.html>

**Morten Flieger**

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Biochemistry

<https://www.uni-goettingen.de/en/666397.html>

**Vaishnavi Arunkumar Menon**

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<https://www.uni-goettingen.de/en/666405.html>

**Felix Fritz**

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Freie Universität Berlin
Bachelor of Science
Biochemistry

<https://www.uni-goettingen.de/en/666398.html>

**Aysenur Canfes**

Turkey
Bogaziçi University
Bachelor of Science
Molecular Biology and Genetics; Chemistry

<https://www.uni-goettingen.de/en/666383.html>

**Amirhossein Hajialiasgary Najafabadi**

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Cell and Molecular Biology

<https://www.uni-goettingen.de/en/666399.html>

**Federico Carrozzo**

Italy
University of Padova
Bachelor of Science
Genetics, Cell Biology, Molecular Biology

<https://www.uni-goettingen.de/en/666392.html>

**Chinzorig Jeppesen**

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University of Debrecen, Hungary
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Applied Microbiology, Molecular Biology

<https://www.uni-goettingen.de/en/666400.html>

**May-Britt Decker**

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Georg-August-Universität Göttingen
Bachelor of Science
Biology

<https://www.uni-goettingen.de/en/666394.html>

**Zeynep Kılıç**

Turkey
Middle East Technical University (METU)
Bachelor of Science
Molecular Biology and Genetics

<https://www.uni-goettingen.de/en/666401.html>

Master's class of 2022/23

**Shantnu Kumar**

India

Hindu College, University of Delhi

Master of Science

Zoology, Genomics

<https://www.uni-goettingen.de/en/666403.html>

**Adeeba Raydah**

Bangladesh

BRAC University

Bachelor of Science

Biotechnology

<https://www.uni-goettingen.de/en/666409.html>

**Chengkun Ma**

P.R. China

Hong Kong University of Science and Technology

Bachelor of Science

Biochemistry and Cell Biology

<https://www.uni-goettingen.de/en/666404.html>

**Spyridoula Sagropoulou**

Greece

Democritus University of Thrace

Bachelor of Science

Molecular Biology and Genetics

<https://www.uni-goettingen.de/en/666410.html>

**Jaschka Nicol**

Germany

Georg-August-Universität Göttingen

Bachelor of Science

Biochemistry

<https://www.uni-goettingen.de/en/666406.html>

**Nandika Sanjog Sahani**

India

Sri Venkateswara College, University of Delhi

Bachelor of Science

Biochemistry, Cell and Molecular Biology

<https://www.uni-goettingen.de/en/666411.html>

**Ingrid Camila Peñaloza Ortega**

Colombia

Universidad Nacional de Colombia

Bachelor of Science

Biology

<https://www.uni-goettingen.de/en/666407.html>

**Juan Tasis Galarza**

Spain

University of the Basque Country (EHU-UPV)

Bachelor in Pharmacy

Pharmacology, Chemistry, Biology

<https://www.uni-goettingen.de/en/666412.html>

**Jonny Petrosyan**

Armenia

Yerevan State University

Bachelor of Science

Biophysics

<https://www.uni-goettingen.de/en/666408.html>

**Animan Tripathi**

India

Delhi Technological University

Master of Science

Biotechnology

<https://www.uni-goettingen.de/en/666413.html>

**Hari Krishnan Radhakrishnan**

India

SRM Institute of Science and Technology, Chennai

Bachelor of Technology / Bachelor of Engineering

Biotechnology

<https://www.uni-goettingen.de/en/666402.html>

**Lukas Widmer**

Switzerland

University of Applied Sciences and Arts NW Switzerland

Bachelor of Science

Bioanalytics and Cell Biology

<https://www.uni-goettingen.de/en/666414.html>

Students

PhD projects started in 2022

**Gantavya Arora**

The biogenesis and function of Human mitochondrial Methionyl tRNA.

*Marina Rodnina,
Markus Bohnsack,
Sonja Lorenz*

**Béla Goertz**

Investigation of mitochondrial nucleoid subpopulations.

*Stefan Jakobs,
Hauke Hillen,
Johannes Soeding*

**Dimitra Tsouraki**

Visualizing gene regulation during erythroid differentiation.

*Marieke Oudelaar,
Jörg Enderlein,
Peter Lenart*

**Luis Fernando Camacho Cordero**

Development of therapeutic nanobodies against virulence factors of multi-resistant bacteria and snake envenomings.

*Dirk Görlich,
Reinhard Jahn,
Uwe Groß*

**Alexandra Kolodyazhnaya**

Phage metagenomics and phage-host interactions.

*Johannes Soeding,
Jörg Stülke,
Jan de Vries*

**Lidiia Tynianskaia**

The role of primate-specific Zinc finger transcription factors during neocortex development and evolution.

*Michael Heide,
Ernst Wimmer,
Ufuk Günesdogan*

**Eduardo Cienfuegos Pecina**

Structural and dynamic characterization of the pyruvate dehydrogenase complex by cryo-electron microscopy.

*Holger Stark,
Peter Rehling,
Sonja Lorenz*

**Frederike Maaß**

Super-resolution microscopy of mitochondria in neurons.

*Stefan Jakobs,
Silvio Rizzoli,
Hauke Hillen*

**Çağrı Urhan**

Inducible relocalization of the cytosolic transcription factors in B lymphocytes during the initiation of humoral response.

*Jürgen Wienands,
Lutz Walter,
Holger Bastians*

**Monica Gobran**

Studying the coordination between cell cycle regulation and cytoskeletal dynamics ensuring timely entry into mitosis.

*Peter Lenart,
Melina Schuh,
Matthias Dobbeltstein*

**Sumeru Panta**

Structural and functional characterization of mycobacterial Fatty Acid Synthase components.

*Holger Stark,
Jörg Stülke,
Alexander Stein*

**Zehra Vural**

Functional analysis of SUMO2 substrates in neuronal synapses.

*Nils Brose,
Henning Urlaub,
Sonja Lorenz*

**Josefa Torres Llanos**

Effects of perturbed SUMOylation and Neddylolation on neuronal synaptic transmission.

*Nils Brose,
Silvio Rizzoli,
Tobias Moser*

**Yumeng Zhang**

Structural studies of the initiation-elongation transition of transcription.

*Patrick Cramer,
Kai Tittmann,
Sonja Lorenz*

Honors and Awards

Faculty Members (current and former)

Patrick Cramer became member of the Berlin-Brandenburg Academy of Sciences. In fall 2022 he was elected President of the Max Planck Society.

Ivo Feußner was elected member of the National Academy of Sciences Leopoldina.

Dirk Görlich received the WLA Award 2022 of the World Laureates Association.

Helmut Grubmüller was elected member of the National Academy of Sciences Leopoldina.

Stefan Hell received the Werner von Siemens Ring 2022. Furthermore he was admitted to the Order „Pour le mérite“ for his outstanding achievements in science.

Hauke Hillen received the Research Award 2022 Peter and Traudl Engelhorn Foundation.

Marieke Oudelaar received the Early Excellence in Science Award Biology of the Bayer Foundation.

Peter Rehling has been awarded, once again, an ERC Advanced Grant by the European Research Council.

Marina Rodnina was elected member of the National Academy of Sciences of the USA.

Students (current and former)

Jannis Anstatt was awarded a PhD fellowship by Boehringer Ingelheim Fonds.

Joseph Neos Cruz received an Otto Bayer Fellowship for Drug discovery in support of his MSc thesis at Yale.



André Fischer received an Otto Bayer Fellowship for Drug discovery in support of his MSc thesis at the Whitehead Institute, MIT.

Bettina Görner received the „40 Under 40 Data Leaders in 2022“ award of the international CDO Magazine.

Goran Kokic was honored with the Young Scientist Award Biochemistry 2022 of the Gesellschaft Deutscher Chemiker (GDCh) honors for his outstanding research achievements in the field of biochemistry.

Mareike Lohse received the Poster Prize Molecular Biosciences at the GGNB Science Day 2022.

Simone Mayer has been awarded, together with an interdisciplinary team, a 2 Mio USD Grant by the Chan Zuckerberg Initiative to study disease mechanisms underlying PCH2, a rare genetic neurodegenerative disorder.

Kimberly Quililan has been awarded the GBM Master Prize 2022 of the German Society for Biochemistry and Molecular Biology.

Broder Schmidt received the William Guy Forbeck Cancer Research Foundation Scholar Award.

Ninadini Sharma won the Science Slam at the GGNB Science Day 2022.

Sina Wille has been awarded a PROMOS stipend by the German Academic Exchange Service (DAAD) for her MSc thesis at the Karolinska Institute.

Summa cum laude distinctions for their doctoral theses and defense in 2022 were awarded to **Valentina Manzini**, **Panagiotis Poulis** and **Roya Yousefi**.

In addition, summa cum laude was awarded for the PhD defenses of **Gaurika Garg** and **Xizhou (Cecily) Zhang**.

Congratulations!

Students

Graduated

The Masters of 2022



Gantavya Arora

(Marina Rodnina)

The effect of human mitochondrial methionyl-tRNA mutations on mitochondrial gene expression.



Luis Fernando Camacho Cordero

(Sonja Lorenz)

Structural and functional characterization of small-molecule inhibitors of an uncharacterized kinase domain.



Eduardo Cienfuegos Pecina

(Holger Stark)

Structural characterization of the human pyruvate dehydrogenase E2 core by cryo electron microscopy.



Monica Gobran

(Peter Lenart)

Plk1 inhibition induces a unique state of prolonged prophase.



Béla Goertz

(Stefan Jakobs)

Purifying mitochondrial nucleoids for sequencing and the role of TEFM in mitochondrial gene expression.



Paulius Greicius

(Jochen Rink)

An image analysis pipeline for phenotyping *Schmidtea mediterranea* in high content screens.



Milena Ivanisevic

(Peter Lenart)

Visualizing NPC disassembly at single pore resolution.



Oguz Can Koç

(Melina Schuh)

A 3D atlas of young and aged mammalian oocytes.



Alexandra Kolodyazhnaya

(Johannes Söding)

A method for the detection of prophages in prokaryotic genomes using clustered sequence searches.



Sumeru Panta

(Marina Rodnina)

Effect of synonymous codon usage on the co-translational folding of gamma-B crystallin.



Kimberly Quililan

(Marieke Oudelaar)

Analysis of the 3D nucleosome conformation of *in vitro* reconstituted chromatin.



Nikola Todorov

(Michael Fainzilber)

Effects of deletions in mTOR mRNA untranslated regions on mTOR protein localization and cell size: A study on fibroblasts.



Juan Camilo Torres Bonilla

(Jörg Stülke)

Investigating uncharacterized proteins in the minimal synthetic organism JCVI-syn3A.



Josefa Torres Llanos

(Jeong Seop Rhee)

Effects of perturbed Sumoylation and Neddylation on synaptic transmission.



Dimitra Tsouraki

(Marieke Oudelaar)

Gene regulation during erythroid differentiation.



Lidiia Tynianskaia

(Katja Burk)

Ataxin2 is a risk factor in amyotrophic lateral sclerosis by affecting the cytoskeleton.



Çağıl Urhan

(Michael Engelke)

The role of tyrosine dephosphorylation in the survival of Burkitt's Lymphoma cells.



Malena von Elling-Tammen

(Argyris Papantonis)

Genome reorganization after mitotic exit.



Zehra Vural

(Marilyn Tirard-Thevenoud)

Functional analysis of SUMO2 substrates in neuronal synapses.



Marcel Wacławczyk

(Matthias Döbelstein)

Characterization and clinical exploitation of the KDM-DREAM axis.



Lucia Winkler

(Rolf Daniel)

Identification of novel lignocellulose depolymerizing enzymes from the metagenome of the shipworm *Teredo navalis*.



Yumeng Zhan

(Patrick Cramer)

Biochemical and structural characterization of an *in vitro* promoter-dependent transcription system.

The Doctors of 2022



Gerrit Altmeyden

Development of methods to decrease aneuploidy in mammalian oocytes.

Melina Schuh

Ernst Wimmer

Peter Lenart



Valentina Manzini

Non-canonical functions of the MDM2 oncoprotein.

Matthias Dobbelstein

Argyris Papantonis

Markus Bohnsack



Dilantha Perera

A toolkit to study nuclear transport pathways: nanobody-mediated inhibition of importin beta-related nuclear transport receptors (NTRs).

Dirk Görlich

Markus Bohnsack

Stefan Pöhlmann



Gaurika Garg

Structural studies of RNA polymerase II complexes with human TFIIIS and capping enzymes.

Patrick Cramer

Markus Zweckstetter

Alex Faesen



Vitalii Mudryi

Elongation factor P: mechanism of action and opportunities for drug design.

Marina Rodnina

Kai Tittmann

Alex Faesen



Panagiotis (Panos) Poulis

Ribosome dynamics during spontaneous frameshifting.

Marina Rodnina

Jörg Enderlein

Sarah Adio

GBM Master Award for Kimberly Quililan

For the first time, the Molbio program asked its faculty members to nominate Molbio Master graduates for the annual GBM Master Award, granted by the Gesellschaft für Biochemie und Molekularbiologie and donated jointly with Springer Verlag. This award is meant to be a distinction for graduated students who submitted an outstanding Master thesis in the molecular life sciences.

Kimberly Quililan received the GBM Master Award 2022 for her excellent performance in her Master examinations and her Master thesis entitled "Analysis of the 3D nucleosome conformation of *in vitro* reconstituted chromatin".

Kimberly did her research in the Lise Meitner Group Genome Organization and Regulation of Marieke Oudelaar at the MPI for Multidisciplinary Sciences as a collaborative project with the Cramer department.

As Kimberly could not attend the Master graduation in October 2022 in person because she was abroad, she joined online and the GBM Master Award was received by Elisa Oberbeckmann on her behalf.



Anuruti Swarnkar

Mechanism of non-canonical ubiquitination by ubiquitin conjugating enzyme Ubc6.

Alexander Stein

Peter Rehling

Dirk Görlich



Roya Yousefi

Monitoring mitochondrial translation with spatial resolution and high throughput strategies.

Peter Rehling

Silvio Rizzoli

Stefan Jakobs



Xizhou (Cecily) Zhang

Structural and functional investigations of transmembrane signaling histidine kinase using NMR.

Christian Griesinger

Kai Tittmann

Bert de Groot

Pursuing the Connectome at E11 Bio

Focused Research Organizations: A New Way of Doing Science

At the end of my PhD, I knew that I loved science — but I wasn't sure if I would make it in academia. At the end of my post-doc, I still loved science — but I was no longer sure if I even wanted to be in academia anymore. During a particularly dreary holiday at the end of 2021, I was agonizing over what to do with my research career. Sharing the results of my research was an agonizingly slow process — my manuscripts had been stuck in revision for months that slowly started to coalesce into years. I was thinking about my next research projects, and all the ideas I was excited about required the kind of money and infrastructure I could only hope to assemble as a PI (if I got lucky with grants, that was) — and I increasingly felt that I didn't want to start managing science; I had trained to be doing science. Doing another post-doc would just mean treading water, delaying the inevitable (dropping out of science) — and that felt like an unbearable waste of the past 15 years of my life.

In short, I felt like my dream of being a scientist was slowly slipping away from me. In that mood, I received an email from Andrew Payne, the CSO (Chief Scientific Officer) of E11 Bio [1], a project he called a "Focused Research Organization" (FRO) — whatever that was supposed to be. He had read my publications on expansion microscopy, and was wondering if we could schedule a Zoom call to have a chat about my research? At the time, I felt so exhausted and defeated — I almost didn't even respond; saying I'm glad I ultimately did would be the understatement of my career. We scheduled a meeting and had a great chat about my own science, the research



The E11 team on the shore of the beautiful San Francisco Bay, where our lab is based.

goals of E11, the struggles young researchers face in current academia, the difficulties inherent to pursuing complex projects even at top institutions — and how E11 proposed to solve these issues.

I have been with E11 Bio for three months now, in my new position as Lead Scientist Molecular Connectomics — and I love what we are doing here. We are a team of ten scientists with wildly different backgrounds, and all of us are working towards the same goal, in a single focused experimental and development pipeline: making everyday single-cell brain circuit mapping a reality. Just try to imagine such a level of coordination between so many scientists in classical academia, where traditions and politics conspire to prevent researchers from working as true teams — everyone needs their first-author paper, and the PI needs a constant stream of manuscripts to apply for new grants. In

short, no lab and no scientist in academia can afford the risk of aiming an entire team at one singular shared project in this way.

How does E11 Bio make this work? E11 Bio is not a university, it is not

Sven Truckenbrodt completed his doctoral research in the group of Silvio Rizzoli at the University Medical Center Göttingen, where he continued as a postdoc for more than a year. He graduated from the Molecular Biology Program in 2016. In summer 2018 he continued his research as a postdoctoral fellow at the Institute of Science and Technology Austria in Vienna. Since September 2022, Sven works as Lead Scientist Molecular Connectomics at E11 Bio in Alameda, California, USA.

Pursuing the Connectome at E11 Bio (continued)

a research institute (such as a Max Planck Institute), and it is not a company or a start-up. We don't aim to develop and sell a product, and neither are we planning to grow into a full-fledged research institute. There are a great many things that E11 Bio is not — so what is it? We are an FRO, short for Focused Research Organization. If that doesn't tell you much, don't worry — in fact, E11 Bio is the first FRO.

The concept of a Focused Research Organization was first ideated by Sam Rodrigues and Adam Marblestone [2]. They recognized that there are research questions that currently cannot be solved by anyone, due to the institutional challenges of modern science — problems that are too complex for a small team of PhD students and post-docs in classical academia, and that don't promise sufficient im-

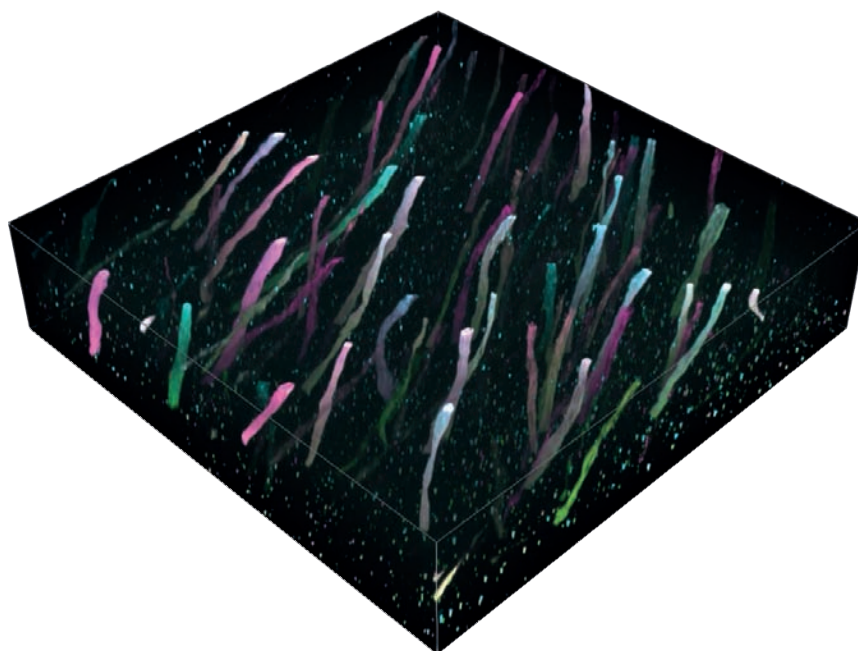
mediate monetary return to attract the interest of industry or a start-up. From that premise, they gamed out what a research organization would have to look like to become able to solve such problems. It would need to laser-focus on a precisely defined problem and drive hard for it in a short time frame. It would need adequate and secure funding, likely exceeding what is commonly available via grants in classi-

cal academia. And it would need to attract scientists, with a combination of unique opportunities and adequate compensation.

These requirements are realized in the Focused Research Organization. E11 Bio is the first FRO, but many more are spinning up or have already kicked off. All of them are members of the Schmidt

advantages allow us to break free of the grant and publication circuit of academia without tying us to the necessities of profit generation in industry. We will make all tools we develop accessible to the scientific community as quickly and directly as possible, to achieve the greatest and most immediate impact possible — an impact measured in helping scientists do exciting new research, not in citation numbers.

The focus of E11 Bio is to develop the tools necessary to map the neural circuits of an entire mammalian brain — and make those tools so accessible and easy to use that every neuroscience laboratory can use them. There are about one hundred billion (in scientific notation: E11) neurons in a human brain, so we have our work cut out for us — but our focused structure, secure funding, a mutually supportive and fun work-



An imaging volume from a mouse brain expanded ~6-fold with expansion microscopy. This bundle of axons is projecting from the motor cortex to the thalamus. Each color represents a different combination of molecular barcodes that uniquely identifies each neuron. This data, acquired at E11, represents a first step towards routine single-cell brain circuit mapping.

Futures Network, under the auspices of Convergent Research as our mother organization. The lifetime of E11 Bio is finite and pre-determined: we have five years to achieve our goals, and then the journey ends. To keep us on track, we are utilizing many project management tools that have been tried and tested in industry, and a nimble start-up like structure with flat hierarchies. We are still doing basic research, but these

ing environment, and the strength of a cohesive team can make things happen that previously seemed impossible.

[1] <https://e11.bio>

[2] Day One Project, "Focused Research Organizations to Accelerate Science, Technology, and Medicine" (2020). <https://www.dayoneproject.org/ideas/focused-research-organizations-to-accelerate-science-technology-and-medicine>

Opening soon: The Pleiner Lab at Stanford

Navigating the academic job market during the pandemic

It is the year 2017, October 21 to be precise, just one day before leaving Göttingen on a one-way ticket to Los Angeles to start a postdoc position at Caltech. I am telling my friends and parents: 'I'll be in the US for 2-3 years and then I'll come back to Germany'. Fast forward five years and a global pandemic later: I got married and I am staying!

Before leaving to the US, I did my PhD in Dirk Görlich's lab at the Max Planck Institute for Multidisciplinary Sciences. I still feel very lucky to have had the opportunity to set up an alpaca farm at the institute to generate single-domain antibodies (nanobodies) as tools for super-resolution microscopy and structural biology. What an enormously fun project!

One of the nanobody-based techniques I developed back then came in handy for a very competitive project during the first years of my postdoc. This ultimately resulted in a publication that with much luck we were able to wrap up just before the pandemic hit the US and labs were shut down across the country. This very fortunate paper allowed me to realistically dream of opening up my independent lab and also meant that I could continue to show funny alpaca pictures in my talks.

The 2020 lockdown created a unique opportunity to slow down, reflect and think about the future. I read a lot and developed the basis for what would become my 'future research plan' a year later. Aside from this I also developed an even more important plan: I was going to propose to my girlfriend! Unlike so many times in the lab,



The author and his wife Deniss posing for a wedding picture

everything went according to plan and she said yes. Trying to avoid a wedding during the height of the pandemic, we set our date to more than a year later in Sept 2021. As you all know the pandemic only got worse, but we made it work anyway with a smaller, partially masked outdoor ceremony, which given the great weather here was ideal after all.

When the lab opened up again, I worked hard during the day and helped with wedding preparations in the evenings. In summer 2021 I was ready to start applying for academic group leader positions. To better understand what to expect, I reached out to many former MolBio friends and colleagues from my time in Göttingen. Their ad-

vice and support made all the difference! Honoring my original promise to friends and family, I initially planned to focus my applications to central Europe. Due to pandemic hiring freezes, my advisor and I anticipated an even more competitive job market than usual. She therefore suggested to also apply to US positions. I only applied to a dozen places on both continents that could offer both excellent science, as well as an international environment with job opportunities for my wife.

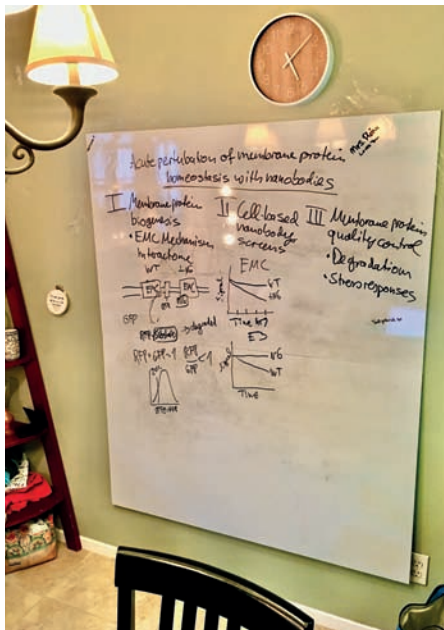
Following a nerve-racking wait for responses, I was really happy to receive two interview invitations from the EMBL Heidelberg in mid-October 2021. I dropped everything and prepared for the interview, which would entail the most dreaded 'chalk talk', which is common in the US, but not in Europe. Here one has to break down one's future research plan in front of a faculty panel using only markers

Tino Pleiner completed his doctoral research in the department of Dirk Görlich at the Max Planck Institute for Biophysical Chemistry in 2016, followed by 1.5 years as postdoctoral researcher. Since November 2017 he works as a postdoctoral scientist at Caltech, California, USA. In June 2023, Tino will start his own lab as Assistant Professor at Stanford University.

E-mail: pleiner@stanford.edu
Twitter: @TinoPleiner

Opening soon: The Pleiner Lab at Stanford (continued)

and a white board. With minimal time to prepare, I borrowed a white board, taped it to my living room wall and practiced day and night. Both interviews lasted multiple days and entailed public presentations in a symposium style with the other applicants, as well as many meetings. While definitely very stressful, the sheer fun and privilege to meet these outstanding faculty members, facility managers, talented trainees and co-



Improvised chalk talk practice

applicants was dominating the experience. The 'chalk talk' turned out to be more of a discussion with the panel, but the time I spent preparing for it was well invested and allowed me to conceptualize my future plans in the most logical way possible. When I finally came back from my interview trip to Germany, I not only brought back an initial offer from the EMBL, but unfortunately also COVID, which completely knocked me out for a week.

The offer from the EMBL in early December 2021 coincided with a surprising invitation to a short Zoom interview with Stanford. Since no slides were allowed, I gave a short speech on my background and plans and answered questions of the committee. With the pandemic in full swing, I was eventually invited to a full virtual interview. While virtual talks were already the norm, I was puzzled by how I would present a virtual chalk talk. My first ever real chalk talk on top of that. The whiteboard-on-the-wall days from a few months ago proved useful and I could eventually convert my sketches into a digital format using a borrowed iPad and Apple pen. While everything went smoothly during the rehearsal, the Apple pen ran out of battery just as I was about to put down the first pen strokes during my chalk talk. The faculty members were comforting me, while I quickly charged the pen for a bit and tried to keep it together. The final decision was postponed until an in person meeting could safely be arranged.

So in late March 2022 I finally visited Stanford's beautiful campus and could meet with trainees and faculty members in person. Two weeks later I was offered an assistant professorship position. What followed was certainly the hardest decisions I ever had to make in my career. Stanford or Heidelberg? Staying in the US or moving closer to my family again? While many factors influenced this difficult decision, it seemed easier for my wife, who runs her own psychotherapy group practice, and I to both stay successful in our careers in California.

The Pleiner lab will open its doors in June 2023 in the Department of Molecular & Cellular Physiology at Stan-



Inviting you to come work with me in beautiful Californial!

ford. We will combine mechanistic cell biology, biochemistry and protein engineering to dissect the pathways and molecular machines that mature essential human membrane proteins like ion channels, receptors and transporters to a fully functional state. We will also develop nanobodies as tools to acutely perturb dynamic intracellular pathways directly at the protein level. I am currently acquiring the labs first alpacas that will be housed on a farm nearby. If you or anyone you know would be interested in a postdoc position in sunny California, which entails living in the culturally and culinary diverse Bay Area near sheer mind-blowing natural beauty (think rugged pacific coast, Yosemite, Lake Tahoe and Sequoia) please reach out! I am building an inclusive team that fosters learning & curiosity, promotes team work and values mentorship to drive an innovative research program that pushes the boundaries of molecular biology!

From subcellular to planetary problems

My path from academic research to climate entrepreneurship

German newspapers like to refer to Silicon Valley as the 'Zukunftslabor' ('future lab') of the world where change happens first. And without a doubt, being embedded in the creative, groundbreaking and collaborative research community at Stanford has made my postdoc an extremely inspiring and rewarding experience. Heading into the year 2020, I was more committed to an academic career than ever before. But just as I was applying for faculty positions in the fall, I caught a glimpse of a future that was viscerally terrifying: wildfires raging around me in the Santa Cruz mountains, temperatures that human physiology cannot sustain, and toxic air that blocked out the sun. Looking at the orange sky, I started to question whether my research on biomolecular condensates in health and disease really addressed the most urgent problems we face in the 21st century.

Suddenly, a loud noise and flashing lights distracted my thoughts. Probably just another one of the false fire alarms that have been plaguing Beckman building. But no, this time it was for real: one of the central transformers caught fire under the strain of the air conditioning desperately trying to beat the heat. To make matters even worse, the firefighters had to disconnect the entire building from emergency power given the centrality of the transformer to the electrical circuits. A race against time ensued: will the fire be under control before all freezers in the building begin to thaw, before all cell lines begin to die? While the firefighters did their best, we were getting ready for a rescue mission of our freezer contents. Luckily, emergency power was



Broder taking a break from everything in Half Moon Bay.

restored just in time. But my initial relief soon turned into worry again: if we can hardly deal with the most distant effects of climate change (such as transformer fires), how do we possibly fix its drivers to avert ever more climate catastrophes? In fact, how could I, with my seemingly highly-specialized skills and expertise, possibly help fight climate change?

We are facing three existential problems in the Anthropocene: mitigating climate change, preventing biodiversity collapse, and providing sustainable resources for an ever-growing human population. When I realized that all three are connected by how we produce our food, a unique opportunity for me crystallized. Humans crave protein, and to meet global demand we use 77% of all agricultural land for animal farming that produces only 18% of global calories consumed – a high-

ly inefficient and unsustainable approach. Were it only about nutritional aspects, replacing animal protein with plant protein would be trivial. But it really is about the experience of eating meat and the functionality of animal proteins during cooking. And as it turns out, decoding and recoding protein behavior across scales is exactly my expertise!

Captivated by the idea to use my skills to build a more sustainable food system, a crazy year began when I was finishing a paper and preparing job talks during the day, and exploring how to start a food tech company at night. After meeting my co-founder Dylan, my schedule was soon re-

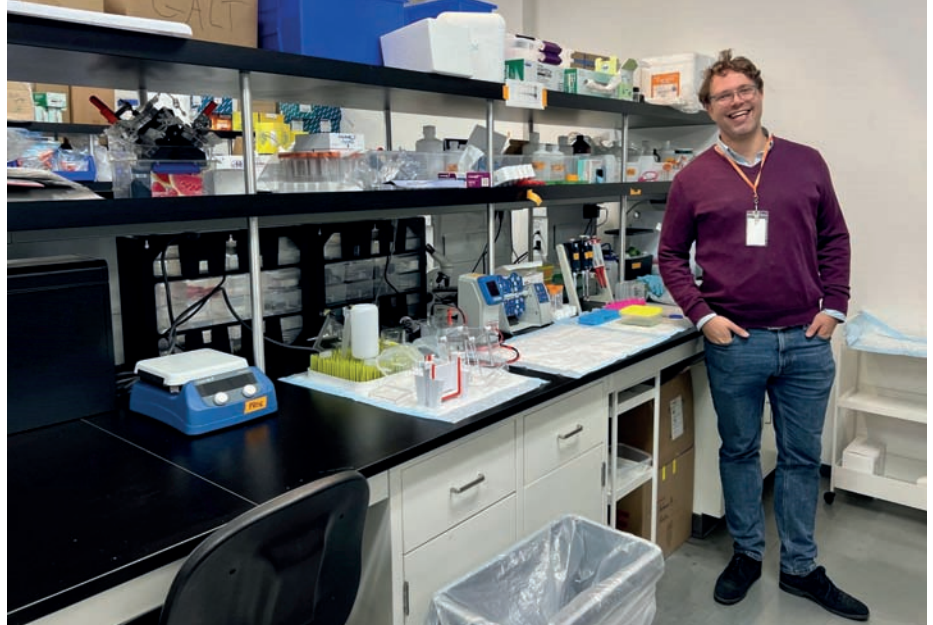
Broder Schmidt graduated from the Molecular Biology Program in November 2012. He did his doctoral research at the Max Planck Institute for Biophysical Chemistry in the department of Dirk Görlich, where he continued his research as a postdoc for almost two years. In September 2014, Broder moved to Stanford University of Medicine where he worked as a postdoctoral researcher in the Department of Biochemistry. Since 2022, Broder is entrepreneur as co-founder and CSO of the food tech company Prose Food (www.prosefoods.com) on a mission to create food without compromise — on the consumer experience, human health, or the climate.

From subcellular to planetary problems (continued)

versed and I found myself planning experiments around meetings with investors. When I realized that I was more excited to present to investment committees than to search committees, I went to the office of my post-doctoral mentor and handed in my notice. Since this watershed moment, we closed our initial funding round, moved into our lab in San Carlos, achieved our first milestones and started to build an interdisciplinary team of protein biophysicists, plant biochemists and computer scientists.

After many years living in Northern California, I feel like I'm only now really getting to know Silicon Valley. From mentors that are founders of unicorn startups to unconferences deep in the forests around Woodside to fireside chats overlooking San Francisco, I have entered a new world that is even more creative, groundbreaking and mission-driven than academia. This new world is also challenging me every day as a scientist, mentor and entrepreneur in ways I never imagined – and that I could not master without our incredible team, scientific advisors, investors and support network.

The existential problems of the Anthropocene are daunting and there is no way around changing how we produce our food, energy, and material goods. This concerns all of us and we need to consider and test every idea, perspective and concern to succeed in becoming a more sustainable, more equitable and more congruent society. If you want to share your thoughts, please don't hesitate to reach out (broder@prosefoods.com).



Outfitting the new lab.



View of San Francisco from the conference room on the 55th floor of Salesforce Tower.

Career paths aren't always linear...

Since I was a teenager I have been fascinated by the human body - how everything works together and how well we can cope ourselves with unexpected circumstances (e.g. wound healing). After finishing my PhD in molecular oncology I was committed to stay in academia and to further contribute to the understanding of disease onset and progression.

I started a postdoc in a lab that studied a multi-cofactor protein (VCP), which is involved in a multitude of processes in our cells relevant for protein degradation. I was performing my research projects, supervised PhD students and was responsible for building up a new microscopy screening unit. All aspects of my work were enjoyable, but soon I realized that the technical aspects of programming the liquid handlers and microscopes as well as maintaining the instruments were my favorite tasks. I taught more and more colleagues how to work with the microscopy-based high content screening set-up and especially how to perform the image segmentation and data analysis afterwards. Thereby I discovered my passion for data analysis and data management. It shocked me when realizing how little we truly learn from each of the experiments and how poorly we capture data for future re-use.

Now looking back, this was the beginning of a journey to the place I am working in today... From being inspired by human biology *per se* to seeing

the relevance of more systematic approaches to advance our disease understanding and to realize how much better we can leverage the information we generate every day.



Italian ice cream during our vacation at Kalterer See (from left to right: myself, my husband Rene, my son Niklas (7) and the twins Hanna and Merle (3))

Unfortunately, I did not get a chance in the academic environment I was in to establish what I had in mind, as the pressure for publishing scientific results was too high to invest time in setting-up a good data management platform and meaningful tools to generate new insights from it. At about this time I was starting my first maternity leave and used the time before birth at home to study data management and to think about what the best set-up would be to make more out of the data we generated in our lab. I was highly motivated to use these learnings when coming back from the break.

I was hit by reality... The professor that always supported me in taking up new responsibilities and driving research, offered short contract extensions, transferred all PhD students I was supervising to a new postdoc he had hired while I was gone and showed no

interest in the ideas I brought in to better handle the data we produce. I left this lab to look for something new...

What should this be? My first thoughts were to join / lead a microscopy facility and to fully focus on the part of my work which I enjoyed most. Unfortunately, only few of these positions are offered and the ones I applied to openly shared that they cannot offer permanent positions and for the 3 years I had left based on the Wissenschaftszeitvertragsgesetz it is not worth it to build up the knowledge. Only then I truly thought about applying to industry and I realized I did not have

a good understanding of what type of positions I should apply to, as many require industry experience or candidates applying early after PhD.

Finally, after six months of frustration

Monika Bug completed her doctoral research in the department of Matthias Dobbstein at the University Medical Center Göttingen in 2010, followed by a postdoc at the Universität Duisburg-Essen for almost six years. After a transitional period she started at Roche Diagnostics GmbH Deutschland, Penzberg as a Scientist - pRED Informatics. Since August 2022, Monika works as a People & Matrix Leader - Discover Informatics at Roche.

Career paths aren't always linear... (continued)



My husband, our son Niklas and myself exploring our new home: Hiking and biking around Partnachklamm and Osterseen

I was offered a one-year back-fill position at Roche in Penzberg to join the Research Informatics division of pRED (pharma Research and Early Discovery). What should I do? I had the chance to fully tap into data management and optimize the data flow for pharma research, which sounded like the perfect fit, but I had my little family at home. So I convinced them to move with me 700 km away for a one-year contract. Luckily, it all worked out well, my son was enjoying his new home from the very first day, my husband went on parental leave to get him settled with KiTa and we all enjoyed the mountain and lake area we are now living in.

Finally, it turned out that I could stay in the department and they offered me all the support to develop and shape the roles I am working in to provide the greatest value and at the same time fit best to my interests. I am acting as a people lead for a global team of digital product owners, business analysts and data engineers. At the same time I am a product owner for a requesting capability that we just released to production and that will enter a DevOps

phase now to increase the value it provides by creating greater transparency, increasing efficiency in the labs and collecting scientific operational data to be further leveraged for smart project planning.

Now, more than five years after joining Roche I can proudly say that all the steps I went through are helping me in my daily job and I am happy I went through all of them, though they sometimes felt wrong and frustrating.

One more thing: I was under the assumption that having a family and assuming roles with growing responsibilities at work are somehow contradicting and one needs to decide. For me this was not the case, by now we are having three children (7, 3, 3) and I was always getting all the support at work to develop and grow, while taking care of my family.



The family has grown: Enjoying a picnic during our first hike with the twins at Kuhfluchtwasserfälle



Don't fret - just keep swimming

Sleep when the baby sleeps. Do science when the baby does science...

I like to think of combining family and career as swimming in the ocean: some days, I'm treading water, simply trying to stay afloat (getting the kids to school on time, grant deadlines, paper revisions). Some days, I'm swimming as hard as I can to not drown (sleepless nights, norovirus, grant rejections, scooped projects). But some days – most days – it's sunny, there's a gentle breeze, and I'm floating in a beautiful sea (hugs and kisses from the little ones, endless giggles, fun projects, big ideas, grant acceptances, paper submissions). When I feel like I'm drowning, I have to remind myself to just keep swimming, and that there will be sunny days again soon.

I have been asked to give advice before about how to combine an academic scientific career and family, but I'm always stumped about how to reply. For me, giving advice suggests that I had some foresight into my family and my career. Honestly, though, I've approached both with a simple "Eh, let's do it!" mentality. Keeping with the ocean metaphor, it's a bit like: "Dive in head first without checking the water's depth".

Personally, I told myself that I would wait to start a family until I had my first first-author paper nearly done. But by the time my fourth year rolled around (midpoint in US PhD), there wasn't a clear path towards publication yet, and I realized there was no point to wait around for some-

thing I had little control over anyways.

You might imagine my surprise when I went for my first ultrasound appointment

who are alive, to keep the bar low.

Choose a supportive mentor

This advice works both on a pure career basis, and on a "combining family and science" basis. If you think you might like to have children during your PhD or postdoc, it might be helpful to work with PIs who have children themselves or to work in labs where other students and postdocs also have children. My PhD mentor has three children himself, and he exemplified a good work-life balance. My postdoc mentor has two children, and he took paternity leave during his own postdoc. I can see a direct path between my own success and their continued support, and for that, I'm extremely grateful.



Elias and Luka at the Frankfurt airport with Albert Einstein

at 8 weeks pregnant, and the doctor saw two little blobs on the screen – identical twins! A lab mate joked I was always enjoying molecular cloning in the lab, and now in life too. I required many more doctor appointments than normal, and I also had to start thinking about how we would fit TWO babies into our NYC apartment and budget. Eventually we figured it out though; I got my paper and graduated, and then moved back to Germany for a postdoc. We had so much fun with the twins that we decided to have another baby in 2021, ~1.5 years after starting my own independent junior group. Luckily, we only had one baby the second time, and the water was deep enough, so I didn't bang my head (yet).

Reflecting back, I thought of three aspects that helped me succeed, which I define as having a job I like and kids

Lena (Hyatt) Kutscher

completed her MSc degree in the group of Wolfgang Fischle at the Max Planck Institute for Biophysical Chemistry in 2011.

She earned her PhD in Developmental Genetics with Shai Shaham from The Rockefeller University in New York in 2018. After a short postdoc with Stefan Pfister at the German Cancer Research (DKFZ) in Heidelberg, she started her independent junior research group at the DKFZ in 2020. Her group studies the molecular and developmental underpinnings of pediatric brain cancer.

Don't fret - just keep swimming (continued)

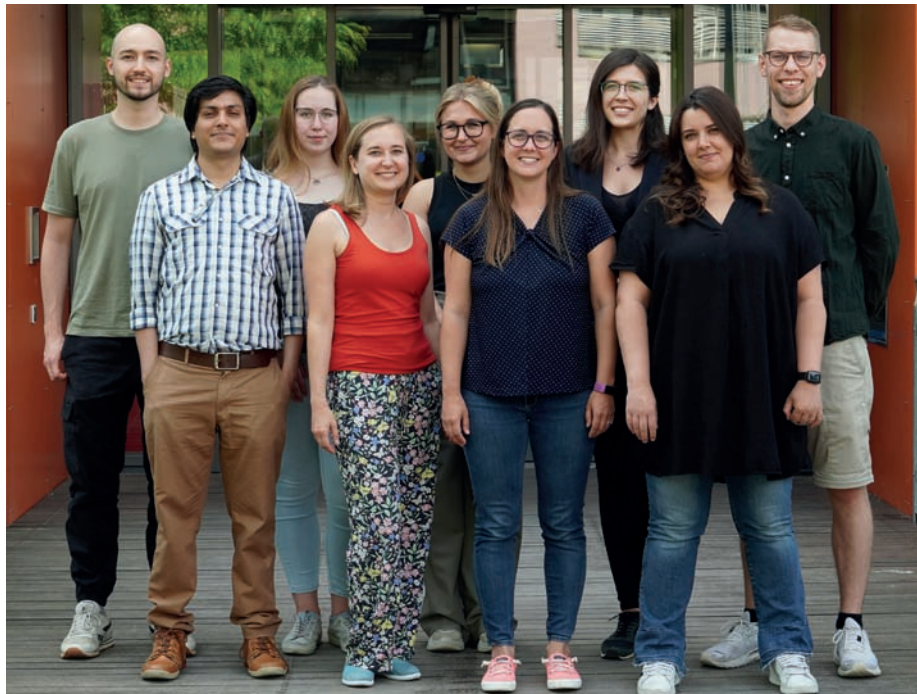
Choose a supportive institute

There's a reason Rockefeller University students and postdocs tend to have children while working there: amazing institutional support. Students receive free healthcare for themselves and their families. I only paid \$10 for my entire twin pregnancy and delivery! For anyone familiar with the US healthcare system, this is phenomenal. Once I found out that I was pregnant, student housing helped me move into a two-bedroom subsidized apartment on campus. The campus daycare was in the same building as my apartment. It had a sliding fee based on income level, and amazing daycare teachers with degrees in early childcare education and a passion for their jobs. Knowing that my twins were well-taken care of during the day by loving teachers made it easy to focus on lab during work hours. When thinking about starting a family during your career, be sure you ask your future employer's HR what benefits are available for people who work at the university or institute.

Find your 'village'

There is an old African proverb: "It takes a village to raise a child" which has been amended by an American author to include: "and it takes a village to support that child's parent." Finding my own 'village' has been essential to keeping me afloat. My mother lived with us in NYC for the first two months of the twins' lives and my mother-in-law during the subsequent two months. My husband only had 2 weeks off as vacation time, so our moms helped me with the babies during my 4-month maternity leave.

Three other close friends (also PhD students) had children around the same time as me, and we organized meals for each other, sent late-night supportive texts, and entertained our toddlers together on the weekend. Once I moved to Heidelberg for my postdoc, I connected with other



"Developmental Origins of Pediatric Cancer" junior research group, led by the author (pink shoes)



Emmy keeps Molly the dog well-fed

academic working moms at DKFZ. We share a camaraderie that runs deep, one that helps me face the challenges of being a parent and being a PI. I couldn't do it without their continued support.

The other key person in this village is of course my partner. He knows how important being a PI is to me, so he was willing to put his own career on hold while I started my lab. For our daughter, we

took equal parental leave of four months each. We equally share sick duty, middle-of-the-night duty, and household chores. He uses his vacation days so I can attend conferences, and he always tries to make it work if an opportunity arises that would be good for my career.

Just do it (if you want)

Because everyone's values and journeys are different, you don't need all three of these elements to combine a career and family. So my final piece of advice: if you want to pursue an academic career and also start a family, just do it. You'll figure it out. Yes, it will be difficult and occasionally feel impossible, unfortunately. You'll work less than you did before the baby. You'll sometimes feel like every time you pick up one ball, another one falls. Just keep swimming, and the days will turn sunny again. But I'm mixing up my metaphors now, so I think it's time I go to sleep while the baby is sleeping. Tomorrow, maybe she'll do some science with me.

Working with a kid in Germany

Is there a perfect time for having a baby? I think I found one. My Richie was born in January 2020, right before the pandemic started, so his mother could do all those mama-things 24/7 basically FOMO-free. There was literally nothing to miss out, neither at work nor at a party district. Jokes aside, it was a beautiful and a tough year, as well as the following two.

Before Richie came to this world, I have been working for about 8 years at a small biotech company ChromoTek GmbH in the suburb of Munich, Germany. I started there as a staff scientist, developing new antibodies and nanobodies for biomedical research. Since we were a tiny firm, I did some product management in addition, to go along with my newly developed reagents. Gradually my role shifted more to project management, and I was promoted to a senior scientist, to take care of immuno-fluorescence-focused development projects in our pipeline. And now I am also a mom.

I find the German system being very parenthood-friendly. After having a full salary for the months of my “Mutterschutz”, I could take another 10 months of parental leave (“Elternzeit”), supported with 2/3 of my usual monthly income. Actually, one could have even taken up to three years of “Elternzeit”, but the second and the

third years would have been unpaid.

That first baby-year in one sentence: I have never been so happy and so tired. And then I could return back to the position and tasks I was doing



Larisa and her son Richie in the wildlife park Poing near Munich

before the leave. I tuned it down to 30 hours per week to accommodate the opening hours of our childcare, which we were lucky enough to get at a reasonable state-supported price. When after a few weeks back at work my boss asked me how I felt, I answered “ecstatic”. He looked at me in a disbelief. But honestly, I felt like in paradise, being able to take a cup of coffee to my laptop and drink it while it was still hot, going to a restroom whenever I felt like this, talking to other grownups (and not about kids), and feeling that I contribute to our projects and finally doing the things I have been trained for and having it all under control! At least I thought so.

Richie started in his childcare and

took around 2 months for his acclimatization (“Eingewöhnung”), during which he could stay there for just an hour or two. Good, that we started that training well in advance. Here comes my piece of advice: if you can, plan at least 1-2 months for the first “Eingewöhnung” of your kid. Finally Richie reached his full time in his childcare (until 4 pm), but he was getting sick very often, and me too. And so it went through that year: 2 weeks at work, 1 week out, 2 weeks in, 1 week out... Actually, I was exhausted and grateful they did not kick me out. Fair enough, I was trying to steer our projects from home,

but sometimes I just let us go through the flu / stomach bugs / covid / hand-

Larisa Yurlova was a PhD student in the group of Mikael Simons at the MPI for Experimental Chemistry and graduated in 2010. After a few months of a wrap-up postdoc, Larisa joined ChromoTek (now part of Proteintech) in the Munich area, where she is currently working as a Senior Scientist. Larisa’s son Richie has turned three years recently. His father Benedikt Frank, a Molbio alumnus as well, is Partner and Managing Director at Kearney, also based in Munich.

Working with a kid in Germany (continued)

foot-and-mouth disease without opening a laptop. Of course, one is not alone. And once when I really had to physically be in the lab, Richie's father took over and rocked his teleconferences together with the kid. Another time Richie's grandpa came from another city and pampered Richie for a few hours.

But still, at the end of that year, I had almost 20 absence days for my kid plus the same amount of sick leave days for myself. In the German system (at least if you have a state health insurance, not a private one), all these days are paid, fully or almost fully. No comparison to the US, where employees may enjoy 10 PTOs (paid time off) per year in total, including vacations. From this point of view, Germany is again great for getting a kid.

Honestly, I cannot imagine how I could have done a career switching in that year. Although I know that it is definitely possible, since my dearly loved friend Alexandra managed a change from science into writing with a toddler in her arms. I admire her lots for that. As for me, I enormously appreciated that I could return to my "old" position, where I can plan routine experiments pretty much blindfolded, where I have my network of colleagues in place who can jump in for me, people I can delegate to without much discussion and bosses who know how I work.

Here comes another piece of advice: if possible, have a stable position at work by the time you get a kid, this helps a lot. And be prepared for surprises. During my parental leave our small company has been acquired by Proteintech, a Chinese-American antibody provider,



up. Having a kid forces you to grow and to grow up. And in this process you learn so much. And exactly when you think you have figured it out, the game changes and you start again from square one. It is a good thing - life stays novel, demanding, rewarding and so much heart opening.

Being a mom is the most beautiful thing I have ever done in my life. Sure, it comes with a list of compromises: no work trips for now, less salary because of the reduction of working hours, vanishing me-time, etc. Sometimes I have to remind myself that it is ok, that our priorities shift. We are not the same ones as we were a year, or three ago. "You are now exactly where you are meant to be, so enjoy it fully".

so in fact I got new (additional) bosses. And now it would have been handy to have an opportunity to travel between the sites, especially since the Covid restrictions are down. Never mind, it is postponed until Richie grows up a bit. And it is not only Richie who grows



Richie enjoys ChromoTek's monthly get togethers with his mom's colleagues

From Rushed & Disoriented to Resourceful & Determined

Julia:

Being a part of the alumni mentoring program was a very valuable, exciting, and interesting experience for me. I am very glad and grateful to the organizers who thought that Aki and I could be a good match. Aki turned out to be an amazing person and a mentor: very open, kind, patient, funny and despite being so busy, she always found the time to answer a million questions that I had.

Before we met, R&D was a total *terra incognita* for me but during our meetings with Aki I learned so much about what to expect from this field, how the career development looks like, which position would be suitable for me after finishing my PhD, which skills I should work on during the PhD, how to improve my CV, etc.

This tandem has also given me a powerful feeling of calmness: it is simply great to realize that there is a very experienced person who you could talk to if you have any doubts or questions regarding your career path.

Akanksha:

In 2018, when I started seriously thinking about moving to Industry, I remember feeling lost. Although I had friends and former colleagues who had made the transition, they were either German nationals or German speakers with permanent residency. My foreign national friends were mostly either academic post-docs like myself or had left Germany for English-speaking countries. I tried sending out 5-6 untargeted industry applications to test the waters and unsurprisingly did not hear back. So began a year-long process to make my CV attractive for industry

during which I did industry-relevant courses, obtained a permanent residence permit, enrolled in German language classes and read multiple books on CV writing and interview skills. The hard work finally paid off and I happily accepted a job at CSL within a few weeks of sending out my first batch of targeted applications.

When I was approached by Steffen to mentor Julia, I was glad to share my learnings with this intelligent and ambitious young woman who was facing several of the same limitations I had faced. Our whatsapp sessions were often 1-2 hours long focusing on ways to become attractive to pharma/biotech employers in Germany. We discussed: what are industry employers looking for? Is it the technical skills, scientific publications, residence permits, network, readiness to relocate, internships, German skills or any of the numerous other aspects that matter? We discussed the different kinds of jobs available in industry and the dif-

ferences between industry and academia including the publication opportunities. Finally we went through Julia's excellent CV, which she custom-made for her industry applications.

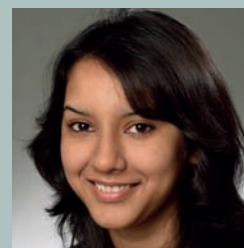
The entire experience for me was an absolute pleasure. Julia's questions were always well thought out, precise and relevant to the topic so I felt that we got the most out of our sessions. There is no doubt in my mind about the successes that she will encounter and I am happy to have played a small role in her journey.

We both found the mentoring program to be an excellent opportunity for the mentee to make an informed decision about their desired career path and for the mentor to help the mentee by sharing their experiences and simultaneously develop valuable mentoring skills. The third round of the mentoring program might be over, but the connection we built is definitely not.

Julia Kurlovich is a final-year doctoral student under the supervision of Ufuk Gündesdogan at the Faculty of Biology at the University of Göttingen.



Akanksha (Aki) Goyal completed her doctoral research in November 2015 in the department of Marina Rodnina at the MPI for Biophysical Chemistry, where she continued her research for three more years as a postdoc. In 2019, Akanksha joined CSL Behring in Marburg, Germany where she is currently working as a Principal Investigator (GLP) and Senior Scientist.



Academia as a career pathway

Choosing academia as a career pathway is frequently a combination of aspiration, inspiration and a strong will to offer new knowledge to humanity. However, as in many career pathways, time and timing are important. Despite the romantic relationship with research, one might consider careful planning and ways to avoid potential pitfalls in this pathway. This is where the two of us joined forces: Panos, a final-year PhD student (currently postdoc) in the International Max Planck Research School for Molecular Biology, and Patrick, an alumnus of the same program and now Professor at the University of Konstanz.

Panos has a strong focus on research, as he greatly enjoys learning and trying new things, designing experiments, interpreting data and forming hypotheses of biological problems. He hoped to benefit from Patrick's experience, who completed his PhD at the Max Planck Institute for Biophysical Chemistry, followed by postdoctoral research at Harvard University and subsequent Max Planck group leader position and professorships in Tübingen and Konstanz.

We started our mentoring relationship by discussing and clarifying the topics that we wanted to focus on over the following months: What are the reasons and what is the motivation to stay in research? How do you select a biological problem to focus on? How do you choose and approach potential labs for postdoctoral work, and how do you apply for fellowships and grants?

All these topics were covered sequentially in 6 online sessions that took place roughly every 6 weeks, where each session acted as prepa-

ration for the next one. For example, Panos' first task was to identify an important and unanswered biological problem that he found fascinating and where he thought his expertise would contribute to a solution. Patrick offered additional points of view on this topic, e.g. by recommending to check scientific areas that are strongly supported by funding agencies or recent special issues of scientific journals that focus on a specific topic or technique.

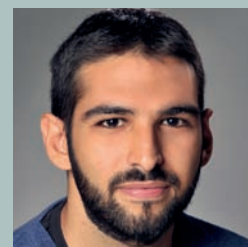
The next step was to identify potential labs that could support these ideas. Part of the strategy was to assess the academic record of several researchers (publications, funding bodies, institute reputation) in order to shortlist them.

Making the contact with potential labs was next on the list: Approaching supervisors just asking for a position was not considered to be efficient; on the other hand, imposing solely own ideas on prospective ideas was also not thought to be fruitful. To navigate this fine line and to find

the right balance for an effective application was where our mentoring relationship of asking questions and bouncing back and forth ideas and different points of view was particularly useful. Working word by word on drafts of cover letters, we managed to build an approach that shows the confidence and knowledge of the applicant, while keeping it open to ideas from the PI's side. At the same time, we discussed the possibility of fellowships and funding bodies. In this case, the mentee led the way forward by asking the right questions, and the mentor's personal experience offered additional insights.

In summary, we are positive that both mentee and mentor benefitted from our interactions over the last year. Sharing different views and personal experience and worries is a key feature of the mentoring program, which we strongly recommend to the next generations of Molbio students.

Panagiotis (Panos) Poulis completed his doctoral research in the department of Marina Rodnina at the Max Planck Institute for Multidisciplinary Sciences in October 2022, where he is still working as a postdoctoral research associate.



Patrick Müller completed his doctoral research in the group of Martin Zeidler at the MPI for Biophysical Chemistry in 2007. After several years at Harvard, he started his own research group at the MPI for Developmental Biology in Tübingen, Germany. In 2021, Patrick accepted an offer for a professorship at the University of Konstanz.



Navigating the world of academia

Ninadini

I have always been passionate about science and research – working in the lab, brainstorming ideas and coming up with creative solutions is very stimulating and gratifying. After my PhD, I was considering a career in academia. However, I wanted to become more informed about the realities of this career path – developing a good profile, choosing the right big questions, funding opportunities, sustainability and funding opportunities, and work-life balance. I was thrilled to be paired with Dr Gabriella Ficz as my mentor. Gabi was a part of the first-ever class of Molbios and has been leading a successful group at Cancer Research Barts UK Center in London since 2013. This was an excellent opportunity to gain valuable insights and guidance from an experienced professional in the field.

Gabi was incredibly kind and welcoming to all of my questions and concerns. From the very beginning, she was open and honest with me about the realities of an academic career, discussing the importance of finding a good research field and lab for my postdoc and how to approach potential labs with my ideas and come across as a strong candidate.

One of the most valuable aspects of our mentoring relationship was her ability to provide candid, objective feedback on my goals and career aspirations. She helped me better understand the funding landscape and how to develop my profile during my postdoc while encouraging me to maintain my passion for research. In addition to providing practical advice and guidance, Gabi was also a source of inspiration and motivation. Hearing about her career trajectory and the challenges she faced helped me see that it is possible to have a successful academic career while maintaining a healthy work-life balance. I am very grateful to

her for sharing her perspectives and clearing out many doubts that often remain unanswered due to diplomacy.

Overall, my experience in the mentoring program was incredibly positive and valuable. I am grateful to have had the opportunity to work with such a knowledgeable and supportive mentor. I plan to keep in touch with Gabi as I navigate the postdoc application process. I highly recommend the mentoring program to anyone seeking valuable insights and guidance for their careers.

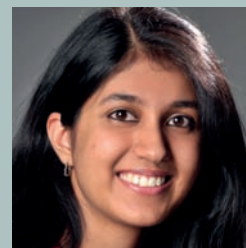
Gabi

I was pleased to know that I was paired with such an outstanding PhD student like Nina, and I am really glad that my advice was useful. I do try to be honest and direct with my students and postdocs about the realities of the academic path, that it's not linear and that it is not always easy or pleasant, that it takes creative work to survive and be satisfied in this role. During the mentoring sessions with Nina I did sense the incredible pressure PhD students feel to tick the Nature/Cell/Science publication boxes, which

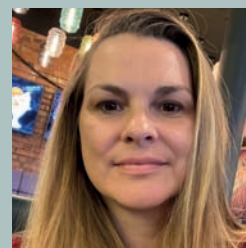
is a shortcoming in the scientific world. I explained that, although it helps, this is not an essential criteria (at least in the UK) to become an academic, instead there are other more important things to focus on: for example skills. It is so important to diversify your skill sets, and I can mention two that I find are essential, and I wish I had started earlier:

1) *Writing*: writing your PhD thesis is a challenge for now so you need to first survive this period but, if you want an academic career, write a fellowship or ask your postdoc supervisor to allow you to write a section of the grant: it's a whole other beast to control. Just because you can do excellent science and you can write up your work in a publication or thesis, it doesn't mean that you will be able to win a grant. It's a different skill set. The earlier you start with this the better. What is key here is to have someone many times successful at winning grants to give you peer-to-peer direct and detailed feedback on your writing as opposed to the content. As a rule, scientists tend to focus on content, so learning to focus on the writing itself is an entirely new skill.

Ninadini Sharma completed her doctoral research in the department of Melina Schuh at the Max Planck Institute for Multidisciplinary Sciences in January 2022.



Gabriella Ficz completed her doctoral research in the group of Donna Arndt-Jovin at the MPI for Biophysical Chemistry in 2005. After several years as a postdoctoral fellow in the laboratory of Wolf Reik at the University of Cambridge she started her own lab at the Barts Cancer Institute, Center for Haemato-Oncology, Queen Mary University of London.



Navigating... (continued)

2) *Coding/scripting abilities and statistics*: Being able to write lines of code in Bash on a Terminal. For example this is excellent starting course online for free: <https://missing.csail.mit.edu/2020/course-shell/>. Being able to understand R and data structures, at least to be able to use existing scripts and statistical analysis packages. Learn the language of Python, numerous online courses, and all the best ones are free.

Finally, the most important message is that hard work is important but do things with joy. You can only excel at things that you do with excitement and pleasure. Just because the academic path has some prestige associated with it, I would not recommend it unless you feel a strong need to pursue it. Just like any other job, it has its benefits but also many flaws, and an under-appreciated dependence on random events. When you work with joy, your creativity is unleashed and inevitably you increase your luck by being prepared with the opportunities that always arise. You can only grab those opportunities if you are prepared. So, think about what is more important for you (write it on a piece of paper like a wish list), then talk to many people, keep working on those skills, have good work ethic in anything you do, do more than you were asked for in your project however small at first, do not take failures as a measure (failure is inextricably linked to success) and remember that rest and recovery is just as important.

When things get difficult, take a step back, breathe, reconnect with yourself, and when you are ready, start again.

Choice of options

Transitioning from Master's to PhD... Well, that was easy. Research allows you to be creative, test your (often) crazy ideas and, most importantly, discover. But for how long? Making the decision to join the Alumni Mentoring Program was a turning point for me, as I realized it was time to stop romanticizing science and think realistically about the next step. Then, having a mentor to provide some awareness and guide you through doubts is a privilege.

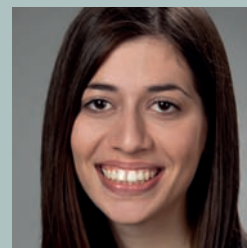
Writing the application was interesting. The questions were simple, yet the answers were complicated. I didn't have one career goal... but many options in mind. My driver has been science and research, but I was unsure whether I should pursue it from the position of a researcher in academia or industry, or move slightly away from the bench. Thus, it became clear that I have to find out more about my future options, decide whether they meet my expectations or not and identify what skills are required.

My sessions with my mentor, Hannes, definitely gave me that clarity. In our

first meetings, we focused on getting to know each other. Interestingly, while introducing myself to Hannes, I was able to acknowledge important qualifications, skills and values of mine that I had ignored. This was fundamental to evaluate which career options would be a good fit. During our following meetings, I got insights into structural hierarchy and roles/responsibilities of a scientist in a company including surprising facts and myths. Beyond that, I became aware of other roles that could potentially be considered. Not to mention that job listings with fancy names are not a hard riddle to solve anymore. Eventually, I got great feedback on how to present and communicate my strengths and experience.

Overall, I would totally recommend joining the Alumni Mentoring program. Connecting with Hannes was an invaluable experience that increased my self-awareness and improved my strategic thinking and decision-making skills. All in all, I would say considering more than one career option is OK, as long as you are aware of your assets and how to navigate towards achieving your goals.

Katerina Vrentzou is a final-year doctoral student under the supervision of Alexander Stein at the Max Planck Institute for Multidisciplinary Sciences.



Hannes Uchtenhagen graduated from the Molecular Biology Program with an MSc degree in 2007 before he moved to the Karolinska Institute in Stockholm, Sweden for his PhD. After several years of postdoctoral research at the Benaroya Research Institute in Seattle, WA, USA he returned to Sweden where he currently works as a Principal Scientist at Anocca AB.



Me and my dog Luoluo

To my beloved Luoluo, Luoluo's papa, Luoluo's godmom and all those who have loved us

It was the worst of times; it was the best of times - to have a dog.

Home office was not fun, but it gave me freedom and flexibility to take care of Luoluo. Luoluo Yang Zelenskii Wiegles is my dog, a Chinese crested dog from a Polish family in Germany. I met Luoluo, whose name was Gigant Empathie, on 6 March 2022 when I was looking for a calm puppy boy at the breeder's. What impressed me first was not his personality but his appearance: How could a dog look so young and old, so pretty and ugly, half lamby and half piggy? Also he looked like a Chinese singer whom I have been fancying. Anyway, the chemistry went well between us. After two weeks, he became my dog. He was three months old when a life-long commitment began.

The beginning is always the hardest. Due to his separation anxiety, I must guard him day and night. Once I left him alone for five minutes to do laundry. I heard his howling far away and saw people in the queue at the entrance of Lunch Box craning their necks to the direction of my flat as if to find out what abusing was happening. In addition, God knows how many times I washed his carpet and bed sheets because he was too young to control his bladder. Apart from all those troubles, I naively thought that having Luoluo would turn me an early bird. However, I was soon disillusioned since he got quickly synchronized with my schedule. Though the getting-up-early plan failed, my life has gradually changed in other ways.

Despite sounding ridiculous, Luoluo has severe hypersocial disorder (she



March 2022, Braunschweig



April 2022, Salzburg, Austria

Me and my dog Luoluo (continued)



May 2022, Luoluo and his cousin Dalai

jiao niu bi zheng in Chinese). He feels comfortable and gains energy by socializing with human and other dogs. And he drags me in. He is good at playing a cutie card but it doesn't work every time. Some turn down his invitation, some bark at him or even bite him. But he merely gets down for seconds and then returns to his by-default confident and happy soul. With this attitude, he could be a great

scientist if he didn't need to sleep for 17 hours per day.

Second, with him, my agility has become sharper. While he is running after my bicycle without a leash, I must concentrate to locate him only by listening to the sound of his collar and to give a 'No' command in advance as soon as I sense his intention for something dangerous.

Last but not least, Luoluo is generous in providing emotional support to me and other students at Happy Hour and Culture Night. Who doesn't like their days to be sweetened by a tiny dog? For me, Luoluo is an inseparable part of life. No matter how a day goes, bad or good, I know there is always someone waiting behind the door, ready to greet me with jumping and kissing. He reminds me that life is not only about working. There are things more important in the world: a dog and a poem as near, moors and seas as far.



Oct. 2022, Molbio picnic

Nine months have flown. On 27th Dec Luoluo turned one year old, a grown-up. I hope he appreciates this article as a birthday gift. After his birthday, however, comes a new problem: How should I cope with the forthcoming vacation to the Philippines without him? Maybe I am the one who has separation anxiety.



Aug. 2022, Corfu, Greece

Yajie Zhu is a doctoral researcher in the group of Argyris (Akis) Papantonis at the University Medical Center Göttingen.

The benefits of being in the Molbio family

When our batch first met in September 2022, different scientific backgrounds, experiences, and 14 different nationalities came together. But one thing, we all had in common: we were all eager to get to know each other, to learn more about the various institutions taking part in the Molbio program and to explore the city of Göttingen.

The Horizons conference was our first chance to do so. Great and interesting insights into various fields of molecular biology accompanied by a splendid evening program provided the perfect opportunity for us to network with our future fellows and those from previous batches. Having no Covid-related restrictions was certainly a highlight compared to previous years, so that we could enjoy most activities during the orientation weeks together with our Neuroscience colleagues. This close relationship with the Neuros is still present and resulted in many friendships.

In addition to the paperwork during the orientation program (at this point a huge thank you to Kerstin and Steffen for organizing our arrival at Göttingen), we explored the general history and underground world of Göttingen during our city tours. Furthermore, we enjoyed the trip to Grenzlandmuseum in Teistungen, where especially the 3D model of the border in addition to the impressive anecdotes of our guide gave us proper impressions of the time when Germany was divided. Following

this trip, we had a joint dinner with the Neuros at the Strandhaus, which we intensively used for intercultural com-

we also had a picnic with a variety of food, snacks, and some games of frisbee, round net, and dodgeball. Over-

all, we had many opportunities to network, learned a lot about the program and got a bunch of good advices for our upcoming year.

One further aspect that is special for our batch compared to the last two is the accompanying mentoring program. Steffen helped us to find a PI who feels responsible to advise us on the selection of lab rotations, Master's and PhD projects, and is also available for general questions regarding our life as future scientists. Many of our mentors also joined the Molbio welcoming dinner at LokalNeun, resulting in interesting scientific and non-scientific conversations. One of our major tasks in

November (besides the lectures, tutorials, and method courses) was to get to know the departments at the MPI, the UMG, and the university. In small groups, we visited many research groups and labs, were introduced to the scientists and the lab rotation projects they offer.



Trip to Burg Plesse



Excursion to Grenzlandmuseum Teistungen



Group photo at the MSc graduation and commencement in October

munication, language lessons, and stories from our previous studies and lives. Other events during the orientation weeks included the Neuro and Molbio graduation and commencement, where we were officially welcomed to Göttingen by the program members. With the previous batches,

The benefits of being in the Molbio family (continued)



Preparation of empanadas and arepas for the...



...Festival of the little candles



First snow in Göttingen



Secret Santa at the GZMB



Christmas and farewell (for the winter break) get-together

One thing I personally love about our study program is that having dinner with a group of Molbios hardly ever comes without learning new facts about other cultures, traditions and of course vocabulary of various languages (necessary or not). This diversity is one reason why monthly culture nights within the program were introduced years ago. During the pandemic this tradition had to be paused and therefore not only our batch was hoping for a return. How this re-launch went is covered in a different article within this newsletter. Nevertheless, we would like to share here the story about the “Noche de las velitas” (festival of the little candles), a traditional holiday from Colombia celebrated in December. Camila from our batch invited all of us to prepare together empanadas and arepas, before lighting candles in the evening to think of those we miss the most and about things we appreciate in life. While sharing our thoughts in the light of the candles we realized how much we all appreciate being part of the Molbio family that - to some extent - compensates our missed families back home. All of us enjoyed this day and we plan to repeat it next year.

With in-person lectures, tutorials, and method courses we are very happy to be back to normal university life, which is something most of us missed during our bachelor's. Moreover the low-key Covid restrictions allowed again birthday and Halloween parties, happy hours at the MPI, discussions over lunch in the mensa, and Christmas market trips to Goslar, Braunschweig, and Hannover, resulting in true friendships within our batch, the previous ones and the Neuros. All of us appreciate the privilege to be the first post-Covid batch that can take full advantage of the benefits of being a part of the Molbio family.

Jaschka Nicol

Our MolBio Master's Graduation 2022

After a year of attending lectures, tutorials, method courses, and lab rotations, many days and nights of studying, a five-hour long exam, a six-month thesis work, and a pandemic progressing alongside, we finally reached the moment that brought us one step further in our academic life: The MolBio Master's graduation!

On the 14th of October 2022, we had our graduation ceremony. We did not only receive a Master's diploma but also were reminded of our achievements and all the hard work spent to get this new degree. This was an opportunity to reflect on this past episode of our lives. Where were we and where are we now? These were the questions that went through our minds while we were looking at our colleagues' happy faces on this day.

We want to take you through our feelings while the day was progressing and the journey we looked back upon. Although not all of us could make it in person to the event, it was really nice to see that everybody was present, some on the stage and others virtually. Who would have thought that our well-known experience attending online classes would be useful at graduation events? However, it was not only useful for us. We must thank the kind MolBio Office for streaming the graduation event online so our family and friends could be part of the ceremony even when they were in our homelands. We later got tens of images and videos taken from a laptop screen while we were giving the speech and receiving our degrees. This felt very fulfilling, and it was indeed something that we needed: to know that some of the important people in our lives were able to witness this significant moment.



The Molbio MSc graduates of the class of 2020/21 at their graduation ceremony

The ceremony was inaugurated by Prof. Rehling who gave a brief introduction about what we have been through in the last year and a half. We were carefully listening and then laughing, not so quietly, when Prof. Rehling told us about how famous our classmate is for attending online classes while there was a significant time difference (we love you, Eduardo). Moreover, we were also reminded of when we came to Göttingen two years ago in the middle of a pandemic, knew very little or no German, and did not know anyone in Göttingen. However, we all were determined to be part of this Master. In these two years, we have been through so many changes that we are now experts at navigating through different, yet sometimes scary, German systems and some of us even managed to speak German with confidence.

After the introduction, we were called one by one to the front in order to receive our diplomas. We all were very happy. It did not matter how many times we had to watch the same scene; we always cheered up for all our classmates. We felt very



Graduation speech by the program speaker Peter Rehling

proud while our thesis titles were being read. It was very impressive to see what our friends were working on and what achievements they did. It is beautiful knowing how a person can develop new scientific interests and

Our MolBio Master's Graduation 2022 (continued)

excel in them in such short periods of time, as we saw with the excellent performance of Dimitra and Kim. For Kim, we did not see you receiving your prize that day, but it did not impede us from giving you the warmest applause. The training we got and our urge to learn and discover had a huge part in where we stand and who we are today.

The ceremony continued with an exciting musical performance. Once again, Sumeru represented our batch with his melodic abilities, alongside Aybeg and Rohan, music talents in the MolBio program. We also got to know the new members of the program. They presented themselves one by one and even gave a very nice speech too! Altogether, there was a sense of belonging and warmth that we felt from the people around us. The smiles and the feeling of pride we received from all our friends inside and outside our batch were enough to make us feel extreme joy and comfort. It is astonishing how our feelings are not just shared among our class, as speaking and getting



Josefa and Monica reviewing the adventures of their class from orientation to graduation

closer to the people who precede or follow us made us realize that it is a general impression. It was beautiful to see how the "MolBio experience" is a true phenomenon that is experienced by all students who have been through the program. The sense of community is very strong. Even though we are in a different country

or city from where we grew up, we do not feel the sense of being "foreign".

After the ceremony, we continued our gathering at the reception. With our friends and family, we celebrated the end of a chapter in our lives and the beginning of a new one. We added some music and rapidly the event transformed into a party. It was only natural to then see the fusion of so many cultures, where everyone is dancing to music from all over the world. With all the MolBios of Göttingen in the same place, younger and older, celebrating the graduation of a new batch, the night ended with a very nice thought on our minds; once a MolBio, always a MolBio.

Josefa Torres Llanos, Monica Gobran



Sumeru, Rohan and Aybeg (left to right) with their musical contribution

Endlich! The MolBio Master's Retreat 2022

Early morning on Friday, August 26, relieved after our grueling master's examinations and more relaxed than we had been in a long time, the 2021 batch of Molbios embarked on our well-deserved retreat. The destination was the historical town of Eisenach in Thuringia, a roughly one-hour journey by regional train. The journey passed quickly as we enjoyed the scenery and chatted with our peers.

Upon arrival, we took a tour of the town prepared by the retreat-organizing committee (Saruby, Neos, Naomi, and Neringa). Passing through the old city gates, our first stop was St. Nicholas' Church, a Roman basilica originally built in 1180. Next we visited the memorial for Martin Luther, who stayed in Eisenach for a while during his exile. Another historical figure born in Eisenach is Johann Sebastian Bach. In pursuit of the traces of Bach, we also visited the St. George's Church, where Bach was baptized. After exploring the charming old town, we hiked up to Hotel Hainstein, a feat of endurance for those used to the gentler hills of Göttingen, especially since it was one of the warmest days of the year.

The hotel was nestled directly across the scenic valley from Schloss Wartburg. After lunch, we tapped into our creative reserves to draw representations of our third lab rotation/ Master's thesis's research topic. Subsequently, we matched each drawing to its creator, followed by short presentations.

After our presentations, we reflected on what we learned throughout the year. Many of us expressed gratitude for having the opportunity to meet and bond with classmates from diverse



On the way to Eisenach. Still masks required on the train



Exploring the town of Eisenach



Tapping into our creativity

Endlich! The MolBio Master's Retreat 2022 (continued)

cultural backgrounds. While some of us gained independence in the process of settling into a new home, some of us gained more insight into ourselves – learning to cherish our mental health in the sea of daily stresses, for instance. Lastly, all of us expressed happiness upon having made it through the Molbio program's "big exam"!

After our group activities, we had a nice dinner at the hotel, followed by the evening celebration. For each classmate, we had an envelope (which we referred to as a "sugar cube"), and we encouraged everyone to write something for every classmate – great memories shared together, qualities we admire, best wishes for the future, and so on. This was followed by dancing to the beats of music from different countries, compensating for the missed culture nights!

The morning after, we woke up to the breakfast buffet at the hotel before hiking to Schloss Wartburg, the first German castle designated as a UNESCO World Heritage site. Upon reaching our destination, we took some class

pictures with Schloss Wartburg in the background to commemorate the wonderful day. The program kindly organized the museum tickets and a guided tour. Through the guided tour, we gained a bit of new knowledge of German history, which broadened our experiences as international students in Germany (for most of us, at least).

Although our retreat was definitely one for the books, we eventually had to say goodbye not only to Eisenach but also to each other, as most of us would be traveling home for our break. Before returning to Göttingen, however, most of us decided to eat lunch together at the



Guessing the creator of each piece



Reflection on our first year

Bollywood Indian Restaurant in Eisenach. We managed to squeeze in some last-minute laughs as we talked about all that conspired during the retreat. Looking back, our first year in the program was one crazy roller-coaster ride—some ups and downs and a few twists and turns every now and then. But what made everything bearable was knowing that at the end of the day, we've always got each other's back and that someone will always lend a helping hand!

Joseph Neos Cruz, Neringa Liutikaite,
Saruby Sharma



Visit of the UNESCO World Cultural Heritage Wartburg

MolBio PhD Retreat: Finally back to the road!

Insights from the 2022 Molecular Biology PhD Retreat & Career Forum in Berlin

The day I arrived in Göttingen to start my Master, Steffen told me a phrase that has been stuck in my mind since: “You can’t do good science if you are feeling tired”. Science is a creative job, a job we have to love to perform well and to be open to new ideas, and in which a good mood is crucial to improve creative thinking. Very few things improve the general mood as well as sharing time and ideas around our peers. In that regard, the yearly PhD MolBio Retreat is a great opportunity to connect with our peers and to disconnect ourselves from the stress and the routine.

In 2022, for the first time since the beginning of the COVID-19 crisis, the PhD MolBio retreat was organized outside of Göttingen, this time at the Harnack Haus in Berlin. The excitement was noticeable from the very first moment while boarding the bus. All of us were craving for the moment, in which the shadow of the pandemic would finally fade away and we would be able to return to our normal lifestyle. One of the most beautiful parts of the MolBio program is precisely the interaction between the students and the exchange

of knowledge, ideas, and good stories, and the pandemic forced us to interrupt most of these interactions. However, not anymore.

mood started to settle for the free-time activities, starting with a guided tour around the Dahlem Campus. Getting to know the history of the so-called “German Oxford” was an amazing experience and a great opportunity to get a glimpse of the history of the Max Planck Society.

After the first day of talks and the first tour, it was time for a delicious dinner and some time to relax. If there is a word that could summarize the non-academic perspective of the Molbio students is “party”. As a Mexican, I learned throughout my life that a great party needs just two main ingredients: some music and a group of people craving a good

time. Luckily, none of them were missing at the Einstein Lounge of the Harnack Haus, which vibed with a great mix of music from all cultures, and sparked hours of dancing and enjoying.

The second day of the retreat started with another session of scientific talks in the early morning. From structural biology by cryo-EM to groundbreaking discoveries about the aging process in oocytes, the excitement was growing during the first part of the



PhD students, alumni, and organizers of the 2022 PhD MolBio Retreat



Poster session at the Laue Saal terrace

The first day of the retreat started with our arrival and registration at the Harnack Haus, followed by a great meal. From there, we jumped directly into the first session of presentations, all of them given by our senior PhD students. We were all fascinated while listening to the set of cutting-edge scientific talks that the program had organized. Few things motivate students more than listening to the progress made by our peers at the end of their PhD. Between the sessions and the coffee breaks, the

MolBio PhD Retreat: Finally back to the road! (continued)



Visits with guided tours to the Allied Museum and the Botanical Garden of Freie Universität Berlin

day. After a wonderful lunch, it was then time for the open-air poster session in bright sunshine at the Laue Saal terrace. At this retreat, 19 posters were presented, mostly by first and second-year PhD students. As it often occurs, this poster session also sparked a lot of interest among the participants, which engaged in hour-long conversations about the struggles of the first experiments during the PhD and how to troubleshoot them.

In the afternoon we started off for a second round of cultural activities, including a visit to the Botanical Garden, the Allied Museum, or a second walking tour around the Dahlem Campus. A good walking time around Berlin was everything we needed to reload the energies for the following dinner and after-party at the Einstein Lounge.

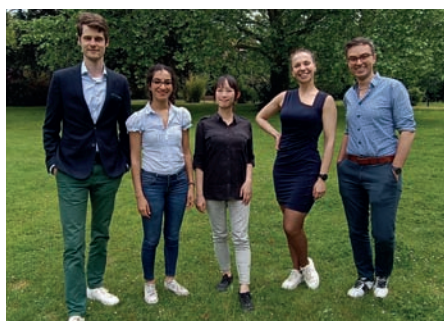
The third day started with a session of short talks given by first-year PhD students. It was a great opportunity for all of us to learn about the new projects and approaches explored by our peers. The stage was then set for five Alumni Career Talks, at which former Molbio students shared their personal experience about the personal reasons for their career decisions, their job profiles and perspectives, giving us a broad perspective on life



After-party at the Einstein Lounge



Alumni speed-dating



Molbio alumni at the Career Forum (left to right): Toni Bäuml (Oliver Wyman Consulting), Sara Osman (Springer Nature Group), Wen-ti Liu (BioNTech), Lena Steshenko (EMBO YIP), Dragomir Milovanovic (DZNE Berlin)

after the completion of the PhD, and the world of possibilities that opens to us inside and outside academia. The third day of the retreat was a day of contrasts, between the excitement of the first experiences as PhD students and the wisdom that comes with the years after the completion of the MolBio program.

After the Career Talks, we concluded the retreat with the Alumni Speed Dating, where we had the chance to to discuss at round tables all our questions related to life after the PhD, life outside academia, and to share experiences with the Alumni. Almost two hours we spent with inspiring conversations in an environment filled with optimism and excitement, before we met for the final wrap-up session of the retreat to summarize our impressions and get feedback.

The 2022 MolBio PhD retreat was a huge success. It was an amazing opportunity to hang out together, share ideas, and just have fun. We are looking forward to experiencing the next adventure of the MolBio program!

Eduardo Cienfuegos Pecina

Building diversity, equality and trust

A review of the Lindau Nobel Laureate Meeting 2022 dedicated to Chemistry

Every year on the Lindau island at the northeast corner of Lake Constance, a group of young scientists from all over the world gets together with esteemed Nobel laureates to exchange ideas and share experiences. These annual “Lindau Nobel Laureate Meetings” feature yearly alternating themes between the three scientific areas, in which the Nobel prizes are awarded: Physics, Chemistry, and Physiology/Medicine. During this exciting week full of events, you can learn from the experiences of Nobel laureates, meet scientists from around the world and discuss important issues the world of science and society faces in the future. The meetings are generally praised for the opportunity of spontaneous interactions between scientists and Nobel laureates, providing fruitful discussions and useful connections, and bringing the scientific community together.

This year the theme was chemistry making the event quite special in several aspects. Because of the ongoing COVID-19 pandemic, the Lindau meetings were on hold for the previous two years with online substitutes bridging the gap. When the virus surged for the first time in Europe with

forthcoming uncertainties, the meeting in 2020 had to be canceled. It must have been surely devastating for the invitees not to be there in person, however the meeting was reorganized into an online sciathon. The same format took place in 2021, but it certainly

MSc Students but also Postdocs and sometimes even early-stage group leaders. They were a collective group of scientists with diverse experiences from every continent. It was eye-opening to hear about the similarities and striking differences in the academic world of different countries.

The topics that were continuously discussed throughout the week were of course centered about the hottest theme of the last two years: the coronavirus pandemic, including various scientific aspects and the interaction with the public.

On the first day, a panel discussion was held entitled “Trust in Science, Trust in Chemistry” dealing with the forthcoming mistrust towards scientists and public servants, and the tendency of the lay public towards pseudoscience and conspiracists, making it difficult for effective solutions to be applied in unanimity.

One example was the growing anti-vaccination propaganda over the past two years. Prof. Venki Ramakrishnan, Nobel Laureate for Chemistry in 2009, was one of the panelists and suggested that the uncertain attitude towards knowledge and skepticism, which we scientists face and have to accept every day, is something rather distrust-

ly didn't offer the spontaneity of interactions that were common during on-site events. This year, the event was held again in person taking the appropriate precautions. The young scientists, who were not able to attend in 2020 were also welcomed this year, making the meeting one of the biggest ever, which was pointed out during every speech throughout the week.

Particularly special at the Lindau meetings is the diversity of young scientists. It was possible to find people from different national, educational, and professional backgrounds including not only PhDs and BSc as well as



Göttingen well represented in Lindau: Arjun Bhatta, Delane Espinueva, Alexander Rotsch, Ida Jentoft, Aybeg Günenç (from left to right)

Building diversity, equality and trust (continued)

ful for people outside of science. He also suggested that minorities and oppressed groups of people are more resentful and stubborn towards scientists, most probably rooted in the underrepresentation of these groups in academia, which brings an emphasis on diversity.

Another topic continuously coming up in different discussions was the ability to rapidly share findings and information, which actually was quite helpful during the pandemic. Prof. Brian Schmidt, Nobel Laureate for Physics in 2011, gave the example that people were sometimes sharing their results regarding the Coronavirus on Twitter, which helped to come up with effective strategies fast and on a global scale. This was as well a common topic in different discussions, emphasizing the need for an open space where ideas can be exchanged quickly and barriers are removed to improve knowledge sharing. The importance of Open-Access Journals was also brought up by different Laureates, like Aaron Ciechanover (Nobel Prize for Chemistry 2004).

Most of the experiences different laureates shared with us were strikingly similar. When they first expressed their breakthrough findings or groundbreaking ideas, they almost always faced resistance from their peers and superiors. Prof. Dan Schechtman, Nobel Laureate for Chemistry in 2011, was talking about his experience when he first discovered quasi-crystals, an unusual formation of crystalline matter: no one wanted to believe him. One of his colleagues even gave him a mainstream crystallography book to mock him, suggesting he has to read it in order to understand that his findings are nonsense and cannot be found in



Panel discussion entitled "Diversity Challenge" (adopted from <https://www.flickr.com/photos/nobellaureatemeeting/albums/>)



Aybeg posing with Hartmut Michel (Nobel Prize in Chemistry, 1988)

this book. Schechtman replied to him saying that indeed his findings cannot be found in that book, since it is a breakthrough discovery. This was an interesting point to realize that something not being appreciated does not necessarily mean it is not worthy.

The last day of the Lindau meeting concluded with a panel discussion entitled "Diversity Challenge" centering around the demographic homogeneity of the academic administration and the biases that are causing this situation. I had the chance to be a part of the panel moderated by Prof. Paul Walton together with renowned scientists like

Prof. Donna Strickland (Nobel Laureate for Physics in 2018), Prof. Pernilla Wittung-Stafshede, and Dr. Vanessa Restrepo-Schild. We mostly discussed gender equality and representation, especially in academia. I pointed out that in today's world, gender is not a binary model anymore and we have to consider that when we talk about equality, people from all gender-queer-spectra should feel safe and welcome. But we also touched on issues regarding cultural and racial diversity, where Prof. Donna Strickland suggested that even though there are a lot of issues still revolving around women's representation and equality in academia, we should also start to work more towards minorities and their representation, since it is, unfortunately, much more unimproved.

After the panel discussion ended, we enjoyed the island Mainau with a picnic and went back to Lindau on a boat trip with a farewell celebration. The whole week was definitely inspiring for all of us and created core memories we shall remember for the rest of our professional lives.

Aybeg Günenç

Back to the Future (with plans)!

For the past three years, all social activities were restricted to two things – masks in public or computers. It was clear that these methods have worked very well, but it was not enough to create the spontaneous flow of new friendships and contacts. Altogether this severely affected our community and reshaped our ways of social interaction.

Suddenly, the room was a safe space and the feeling of doing something new outside (surrounded by people you can talk to) brought mixed feelings. This social isolation has affected and continues to influence our Molbio/Neuro community, as most people did not meet the newcoming batches in the past years. It has resulted in disconnection and the feeling of not belonging, as reported to us by fellow students of our program. And what we value the most? Of course, the community.

Even though the pandemic is still ongoing, (other) great scientists have produced the emergence and following widespread usage of vaccines. With the resulting relaxed measures, we were able to come together again. As the Ph.D. representatives of our program, we, Yulia and Aybeg, quickly took the opportunity to bring students from all batches together to meet and connect with each other. We have planned several events and will plan future gatherings to facilitate stronger connections between students. As we all know, these can range from supervisor-student relationships to friendships and even marriages.

Our first gathering was a picnic happened on the 16th of October 2022. We wanted to enjoy the outdoors, so we gathered around Kiessee with students from different batches. Luckily, the weather was sunny and warm, without any prospects of rain unexpectedly. We brought food, drinks, and games and had quite a fun. All Molbio and Neuro M.Sc. and Ph.D. students



Guided tour at the new science museum Forum Wissen

were invited to enjoy the lovely weather with us, which was the wonderful opportunity to welcome the new batch and make amends for the past year's misfortune, which kept us apart.

Our second gathering by the end of this year was our excursion to the newly opened Forum Wissen on the 20th of October

went there as a group of students from Molbio and Neuro programs for a guided tour and explored the space together. After our excursion, we finished the trip with a dinner at Cafe&Bar Celona to fill not only heads but also stomachs.

We are planning to continue these gatherings, trips, and excursions for the



Picnic at Kiessee

2022. Forum Wissen used to be an old university building and has re-opened as a museum and exhibition venue. The current theme is to explain the knowledge-making process in different academic and scientific fields to the general public. The Forum offers a variety of exhibitions from various fields and teaches you something different every time you go there. We

upcoming year and looking forward to your participation! The nearest one is our excursion to the Max Planck Institute for Solar System Research, where we will be glad to meet all registered students.

Stay healthy and have fun!

Aybeg and Yulia

Return of the Culture Nights

Review and expectations, reported by two Molbio students

Jannis Anstatt

PhD student, member of the MSc class of 2019/20

For many years, culture nights have been a hallmark institution of the Molbio and Neuro programs. When I decided to apply, the mention of culture nights on the website was not only a promise of fun events but also an indicator of the program's social aspects that, as I hoped, would foster interaction and friendship between its students.

For those reasons, once I arrived in Göttingen, I was thrilled when an email from the coordination office announced the culture night planning session, and I signed up for organizing the Arts- and the German Culture Night. The Arts Culture Night, which took place in January, was a lot of work but also a huge success and a great event for everyone involved. It was fascinating to see hidden talents brought to light in so many of my classmates and to dive into so many different cultural worlds. However, as we were at the height of the preparations for the Indian Culture Night, learning Indian Songs and Dances and preparing massive amounts of Indian Food, the event had to be cancelled because of the pandemic just four days in advance. As you can imagine, this

break turned from months to years and no culture nights took place for two whole Molbio/Neuro batches.

Finally, in autumn 2022, the long-awaited email announcing a new culture night planning session was finally sent out. Just like the 2018 batch did in our year, we decided to host the very first culture night to pass on the tradition to the years

However, the return of the culture nights excited all of us in a special way, since we all heard stories and anecdotes about how marvelous they can be. After the Cell Culture Night in November – organized by senior batches – we knew what everybody was talking about. The organization of a Winter Culture Night in December, including a pub quiz about German and international Christmas traditions, Secret Santa, and karaoke was covered by our batch in collaboration with the Neuros. Both the organization and the party itself were very amusing and got us even more thrilled to start in the next year that is packed with culture nights from all over the world.

Our journey around the world will cover the Spring Festival from East Asia, the Persian New Year Nowruz, a Turkish, a Mediterranean and a

Latin America Culture Night and, of course, the famous and notorious Indian culture night in March, for which the planning already started in December and where the learned dances and songs back from 2020 are more than welcome to be finally performed. Being optimistic that all events can go as planned, me and the whole batch are really looking forward to them making our Master's year even more special than it already is.



Winter Culture Night, December 2022

of students that had not yet enjoyed the experience. With an estimated 100 Molbios, Neuros and friends attending, the Cell Culture Night was a sparkling event and a worthy start into the new academic year.

Jaschka Nicol

Member of the MSc class of 2022/23

Being part of the 2022 batch, our start was coined by in-person networking events that gave us the perfect opportunity to get to know each other.

Standing together through hardships

Plans and thoughts by the PhD representatives Aybeg and Yuliia

This year has finally brought us some fresh air and a possibility to return to “normal” lives. Göttingen municipality recently lifted the restrictions that have been following us for more than two years. 2022 became a transition period with more gatherings and opportunities to explore. In some cases, it even came with new responsibilities such as becoming a PhD representative, which happened exactly to us.

Based on the results of elections, we, Aybeg and Yuliia, were chosen to represent Molbio students’ voices in 2022-2023. We are from the same batch of 2018/2019 and even the same methods course group, which helped to develop a close friendship. When the results came out we were very happy to form a team and become the liaison between PhD students and the program committee. Our work as PhD representatives will focus on three main topics:

Mental Health

At our first meeting as PhD representatives, we defined a primary goal: to better the lives of Ph.D. students in as many ways as possible. Recent years have brought a major shift in our lives, including the COVID-19 pandemic, wars, protests, natural catastrophes and more in the home countries of our students. For example, I, Yuliia, come from Ukraine and the war has left a great damage to my well-being and especially my mental health. Isolation, problems, failures and mistakes in research and overall life greatly impact all of us.

Therefore our focus is to listening to the troubles of our PhD students and creating tools to help them. Stress

check-ups are offered to students of our program and such a tool is important to assess students’ reaction to work-related issues. However, we want to look at mental well-being



Yuliia and Aybeg

from a different perspective. For that, we plan to develop a survey to assess the possible ongoing issues of students and come up with an approach that can be used to ease them.

Discrimination

Besides mental health, another issue we would like to focus on is discrimination in a wider context. Although Germany and especially Göttingen are safe environments for people of backgrounds who often tend to get discriminated (foreigners, people of different race, non-native language speakers, women, queers etc.), there are still issues observed by our student community. Refusal of service based on profiling, preferred language medium or unpleasant encounters regard-

ing these topics have been reported to us. These issues seem to be related to typical mindsets that are hard to change on either the personal or the institutional level. We would like to address these issues in our term and maybe collect experiences based on these, which might help us to take action towards these problems.

We are planning in the near future a survey to collect these experiences and find out if there is a certain pattern that is observed on a certain level. This can help us to create a collective case towards an institution or to raise public awareness. There are, of course, different types of discrimination, based on race, gender, orientation, language etc. It would help us to tackle which one is the most problematic. One such common issue in Germany is so-called linguistic discrimination. Of course, in Germany the official language is German and officials do not have an obligation to conduct service in any other language. Yet the attitude is sometimes discouraging or even furious towards international students, when they express that their level of German is not sufficient. Unnecessary comments, such as “you should learn German if you want to stay here (regardless of the time you have been here)” or “Here is Germany and here we speak German!” are unfortunately common phrases we sometimes hear, accompanied with an unfriendly attitude and sometimes going as far as sabotaging the person.

Apparently, the best way to avoid such circumstances is to get better German skills. For this we are planning to launch a German language

Standing together through hardships (continued)

tandem project, where people from the program can learn German from their German friends in the program in exchange of their native language. This and many other topics regarding discrimination are certainly something to which we want your feedback, which might help us to contribute to the improvement of the situation.

Social Activities

The 2020s have hit us in ways we have never encountered before. The pandemic, political destabilization and polarization have made us feel worrisome and isolated.. Because of

the subsequent COVID waves, it had become extremely hard to just get together with our friends and family. It was nearly impossible to organize in-person social events last year. We would like to change that in our term. Now as the culture nights are coming back, this already strengthened the community feeling in our program. In the future, we would like to plan more excursions, hikes and get-togethers to keep the community close. We are obviously happy to receive any of your ideas on different experiences that we can go through together.

As we know our lives consist not only of work. Communities are important to moderate and cheer the lives of many, and may help with issues that each of us is facing, be it work- or non-work-related. Thereby, after all the restrictions, we want to get people back together. So that we can stand together through hardships.

Aybeg Günenç and Yuliia Tereshchenko

Our Molbio student representatives

MSc student representatives



Congratulations to our newly elected MSc student representatives **Juan Tasis Galarza** (upper photo) and **Nicol Jaschka** (lower photo). We appreciate your dedicated work and your continuous feedback regarding suggestions or concerns of your classmates in order to further improve our program.



Many thanks to our former MSc student representatives **Joseph Neos Cruz** (upper photo) and **Neringa Liutikaite** (lower photo). We remember your class as a very active (Molbio hoodies and much more) and lively group with many joint activities, concluding with the Master's retreat at the end of the examination week in Eisenach in combination with a visit to Wartburg Castle.



PhD student representatives



Congratulations to our newly elected PhD student representatives **Aybeg Günenç** (upper photo) and **Yuliia Tereshchenko** (lower photo). You have taken the initiative to initiate numerous social activities already, taking advantage of the end of many restrictions which challenged us during the pandemic. We appreciate your commitment and ideas for future projects and activities, as outlined in this newsletter.



Many thanks to our former PhD student representatives **Debojit Saha** (upper photo) and **Atmika Paul** (lower photo). You helped our program to navigate through the most challenging time of the COVID-19 pandemic. You took the lead in the organization of the student-hosted session with our applicants during the interview week and organized a great hiking tour to the Harz mountains for our students. Great job!



Horizons memories...

After two consecutive years of hosting the conference online, due to the ongoing Covid-19 pandemic, we were particularly excited that, for 2022, the 19th Horizons in Molecular Biology was again in person! To ensure the safety and well-being of all our participants, distancing rules were followed in all areas, masks were mandatory during the poster and speed dating sessions and all organizers were subjected to antigen tests on a daily basis. However, we were still able to hold social events, including the “Join us for a beer” gathering, the traditional conference party, the speaker’s dinner and the Max Planck Institute “Happy hour”. These events, that were totally abolished during the past two years, make up the core of the symposium, as they give our invited speakers and participants further opportunities to interact and exchange ideas, in a relaxed context outside of the scheduled plenary lectures and panel discussions.

This year’s Horizons took place from 12th to 15th September at the Max Planck Institute for Multidisciplinary Sciences in Göttingen. Following the aim of Horizons, not only to communicate current scientific topics, but also to provide the participants with a clear image of diverse career opportunities, in and outside academia, the first day of the symposium was dedicated to our Career Fair. Speakers coming from a wide range of career pathways, including Oliver Rinner, Satya Dash and Khalil Abou

Elardat (industry), Chiara Pastore (senior editor in Nature Nanotechnology), Bischoy Hanna (medical consulting), Marc Gerauer (patent attorney) and Claudia Walther (managing director of Boehringer Ingelheim Fonds), shared their personal career trajectory, their everyday

ing, fulfilling and also equally contributing to global science advancement and communication.

Once again, Horizons became an exclusive platform for interactions between students and scientists from diverse backgrounds around the world. The scientific talks began with the keynote speech from 2013 Nobel Laureate James Rothman, who shared the recent developments in the field of neurotransmission and arrangement of different SNARE proteins at the synapse. Over the course of the next three days, fascinating talks continued to gather widespread interest and expand the horizons of the audience. Alexey Amunts and Luca Scorrano shed light on the emerging field of mitochondrial biology. Tom Rapoport once again thrilled the protein enthusiasts with his talk about the peroxisomal protein transport mechanism. Chris Proud discussed his novel capCLIP method to capture and quantify cellular mRNAs, while Alice Ting talked about her chemogenetic and optogenetic technologies for probing

molecular and cellular networks. Cutting edge science was showcased by many eminent scientists like Azim Surani who talked about the novel genomic imprinting and Cassandra Extavour who presented, although difficult, but fascinating imaging and mathematical models to understand nuclear movements in early embryo. At the same time, Shiv Pillai, Tyler Jacks, Kushagra Bansal and Nina



The Horizons 2022 organizing team: From left to right / front: Gantavya Arora, Nesil Esiyok, Çağıl Urhan, Dimitra Tsouraki, Vaishali Goyal, Naintara Jain, Mareike Lohse, Sumeru Panta, Annabel Maisl; back: Monica Gobran, Nilanjan Ghosh Dastidar, Ana Vuckovic, Jannis Anstatt, Alexander Rotsch. [Not shown: Delong Li, Babora Knotkova, Atmika Paul, Malena von Elling-Tammen]



life at work, as well as what keeps them motivated to science outside the academic world. As every year, the career fair day was not restricted to scheduled talks by the speakers but also included two speed-dating sessions that allowed all participants to discuss with the experts of their interest, ask their questions in person and find out how alternative career paths outside academia can be challeng-

Horizons memories... (continued)

Papavasiliou broadened the audience's interest in immunology and oncology. We had the pleasure to host some of the most distinguished scientists from around the globe who have significantly advanced their field of research, such as Prerana Shrestha, Kerstin Göpfrich, Olivier Duss, Meytal Landau, Tamal Das, Tal Dagan, Orly Laufman, Konstanze Winklhofer and Barbara Treutlein. Sonja Lorenz and Marieke Oudelaar, the new group leaders at the Max Planck Institute were whole-heartedly welcomed and graciously applauded by the audience for their talks on Ubiquitination machinery and three-dimensional genome organization, respectively.

As a Horizons tradition, the budding PhD students were given the chance to present their research work to the audience, during the "Awarded Student Talk" session. This year, Florian Kabinger (MPI-NAT), Alejandro Aguilera Castrejon (Weizmann Institute of Science) and Francesca Lugarini (MPI-NAT) were the ones that came on stage and presented their interesting work to our audience. In addition, numerous students got a chance to present a poster during our three-day poster session for which four students were graced with the best poster award (Jury) and the most popular poster (audience) from the sponsors to appreciate their work. Apart from the talks, the organizers team also arranged many enjoyable dinner parties and a "cheese and wine" session where students could directly approach and share ideas with the speakers.

The panel discussion this year majorly focused on the most debated topic in scientific community: Who gets the credit and how does the recognition of scientific discoveries work. The panellists shared their experiences and advice in an hour-long fruitful discussion on some



Watching the keynote lecture of James Rothman



Wine & Cheese (also vegan) poster session

sensitive topics, which attracted great assortment of questions from the audience. This also turned out to be a platform where the students could break the formal barrier and share their experiences and troubles with the panelists.

After a great comeback from the online symposium for two years, the 19th Horizons

turned out to be very successful with some positive and constructive feedback. In year 2023, we are going to celebrate the 20th Anniversary of our 'Horizons in Molecular Biology' symposium inviting speakers from diverse fields like Molecular biology, Neuroscience, Biochemistry, Cell Biology, Structural Biology and Biotechnology. The invites to the speakers have been sent. We already have a line-up of some confirmed speakers, which include Ramanujan Hedge, Peter Walter, Michael Minczuk, Joanna Rorbach, Yamuna Krishnan, Frederick Sigworth, Taekjip Ha, Pascal Kaeser, and the list continues. Stay tuned to know who will join us for the Career Fair and the workshops – all information will be updated on our website www.horizons-molbio.de as well as on our social media! The organizing team looks forward to welcoming you at the 20th Horizons in Molecular Biology which will be held from 11th to 14th September 2023 in Göttingen! See you all there!

Dimitra Tsouraki, Gantavya Arora

Horizons speakers 2022

Alexey Amunts, Kushagra Bansal, Tal Dagan, Tamal Das, Olivier Duss, Cassandra Extavour, Kerstin Göpfrich, Tyler Jacks, Meytal Landau, Orly Laufman, Sonja Lorenz, Marieke Oudelaar, Nina Papavasiliou, Shiv Pillai, Chris Proud, Tom Rapoport, James Rothman, Luca Scorrano, Prerana Shrestha, Azim Surani, Alice Ting, Barbara Treutlein, Konstanze Winklhofer

Joining the program in 2022

Jan de Vries pursued his doctoral studies at the Institute of Molecular Evolution of the Heinrich-Heine-Universität Düsseldorf after he completed his studies of biology at Uppsala University, Sweden. From 2016 to 2019, Jan worked as a postdoctoral researcher at the Center for Comparative Genomics and Evolutionary Bioinformatics at Dalhousie University, Canada on a DFG Research Fellowship. In 2019, he joined the Department of Applied Bioinformatics at the Institute of Microbiology and Genetics, University of Göttingen as a Junior Professor (tenure track), received an ERC Starting Grant to set up his group, and was tenured in 2022. In 2020, Jan received one and in 2022 three DFG Individual Research Grants. The research of Jan and his team focuses on (1) plant evolution and plant terrestrialization, (2) comparative functional genomics, and (3) evolutionary bioinformatics.



They apply a wide range of molecular biological approaches combining classical molecular biology with high-throughput methodology within a functional evolutionary genomics framework to the study of plant and algal evolution. As a new faculty member of the Molecular Biology program, Jan contributes to the Master's curriculum with a lecture on functional and comparative genomics. In addition, his group offers lab rotation projects.

<https://www.uni-goettingen.de/en/618326.html>

Michael Heide studied Biology at the University of Tübingen and earned his doctoral degree from the University of Heidelberg in 2014, where he stayed as a postdoctoral fellow for another year. From 2015 to 2021, Michael worked as a postdoctoral researcher in the lab of Wieland Huttner at the Max Planck Institute for Molecular Cell Biology and Genetics. In 2022, Michael joined the German Primate Center as a junior group leader and set up his research group "Brain Development and Evolution", funded by his ERC starting grant (PRIMAZINC). The main focus

of Michael's group is the investigation of the development and evolution of the primate neocortex. In particular, they would like to find out which genes are responsible for the development of different neocortex morphology (size and folding) of different primate species, using both primary tissues and brain organoids from different primate species. As a new Molbio faculty member Michael took over the Organoid lecture from Rüdiger Behr. In addition, he is offering one of the Molbio MSc methods courses on DNA and offers lab rotation projects. Since summer 2022, Michael hosts the PhD project of a Molbio student in his group and is currently supervising another MSc thesis project.



<https://www.uni-goettingen.de/en/670953.html>

Current faculty members (University of Göttingen and UMG)

Biology

Sarah Adio, Gerhard Braus, Rolf Daniel, Jan de Vries, Ivo Feußner, Ralf Ficner, Christiane Gatz, Ufuk Günesdogan, Kai Heimel, Wilfried Kramer, Heike Krebber, Volker Lipka, Burkhard Morgenstern, Stefanie Pöggeler, Thomas Spallek, Jörg Stülke, Kai Tittmann, Ernst Wimmer

Chemistry

Andreas Janshoff, Claudia Steinem

Physics

Jörg Enderlein, Dieter Klopstein

Agricultural Sciences

Bertram Brenig

Medicine

Mathias Bähr, Holger Bastians, Tim Beißbarth, Markus Bohnsack, Matthias Döbelstein, André Fischer, Uwe Groß, Heidi Hahn, Hauke Hillen, Stefan Jakobs, Tobias Moser, Argyris Papantonis, Peter Rehling, Silvio Rizzoli, Michael Thumm, Henning Urlaub, Jürgen Wienands

Joining the program in 2022

Oleksiy Kovtun studied Biochemistry at the V.N. Karazin's Kharkiv National University, Kharkiv, Ukraine, before he moved to the University of Queensland, Brisbane, Australia to do his PhD in Molecular Cell Biology with Kirill Alexandrov. From 2012 to 2015, Oleksiy worked as a postdoctoral fellow with Brett Collis and Robert Parton at the University of Queensland, from 2015



to 2021 with John Briggs, EMBL Heidelberg and MRC Laboratory for Molecular Biology. In 2021, he joined the Max Planck Institute for Multidisciplinary Sciences as a Group Leader. Oleksiy's group is interested in molecular mechanisms of membrane trafficking. They aim to understand how vesicular coats function as sorting and membrane re-modelling molecular machines, enabling specific trafficking routes between cellular organelles. To capture vesicular coats in their active membrane-assembled state in vitro and in situ they use cryo-electron tomography. In addition, they apply biophysical and cel-

lular assays to complement structural studies. The current research projects of Oleksiy's group aim at deciphering how vesicular coats drive molecular cargo retrieval in endosomes, the central cellular transport hub. As a new Molbio faculty member Oleksiy will take over the lecture on Membrane Traffic and the Molbio MSc methods course on Cellular Compartments/ Subcellular fractionation from Reinhard Jahn. He is also offering lab rotation projects.

<https://www.uni-goettingen.de/en/659736.html>

Leaving the program in 2022

Marcel Wiermer was leading the independent research group, Molecular Biology of Plant-Microbe Interactions' at the University Göttingen. In 2018 he completed his habilitation in Botany. Marcel joined the Molecular Biology Program in 2019, when he took over the Molbio MSc lecture of Volker Lipka on *Arabidopsis*.

His research group investigated the molecular mechanisms that regulate spatial communication between the cytoplasm and the nucleus in plant cellular immunity to pathogenic microbes, using *Arabidopsis* as a model organism. Specifically, his team employed biochemical, cell biological, genetic and molecular

approaches to study the functions of nuclear transport receptors (NTRs) and nuclear pore complex proteins (Nucleoporins) that are essen-



tial for plant disease resistance and control nucleocytoplasmic trafficking of proteins and RNAs. In 2022, Marcel accepted an offer by Freie Universität Berlin and became Professor for Biochemistry of Plant-Microbe Interactions. We thank him very much for his contributions to our Molecular Biology Program and wish him all the best on his new position.

https://www.bcp.fu-berlin.de/en/biologie/arbeitsgruppen/physiologie_biochemie/ag_wiermer/index.html

Current faculty members (Non-university institutions)

Max Planck Institute for Multidisciplinary Sciences

Sarah Adio, Nils Brose, Patrick Cramer, Alexis Faesen, Dirk Görlich, Christian Griesinger, Helmut Grubmüller, Stefan Hell, Hauke Hillen, Reinhard Jahn, Stefan Jakobs, Oleksiy Kovtun, Peter Lénárt, Sonja Lorenz, Klaus-Armin Nave,

Marieke Oudelaar, Jochen Rink, Marina Rodnina, Melina Schuh, Johannes Söding, Holger Stark, Alexander Stein, Henning Urlaub

German Primate Center

Rüdiger Behr, Michael Heide, Stefan Pöhlmann, Lutz Walter

Donations for Culture Nights

A big THANK YOU to our alumni and faculty members for the overwhelming response to our call for donations in support of our Culture Nights! For more than 20 years, the students of our Molecular Biology and Neuroscience programs have jointly organized with great commitment, heart and soul monthly Culture Nights for friends, colleagues, and all those interested in campus life, taking advantage of the enormous cultural diversity in a student community from more than 50 different countries.

During the pandemic, we realized even more how precious the Culture Nights are in terms of intercultural exchange and for establishing friendships across both programs and all student generations (see also p. 45 of this newsletter). Last November, this tradition could be re-launched with great success. Before the pandemic, we had a small budget to cover the costs for rooms, drinks, the buffet and decoration. Now we are dependent on donations in order to be able to continue the Culture Nights free of charge.

The numerous donations and emails we received in response to our call impressively underline the significance and high value that our Culture Nights have for the members of our programs. Within less than two weeks, we received 6,325 € of donations! We sincerely thank

Current profession and location of our Molbio PhD alumni

Profession

Academia / Research (42%)

Professor 6%
Group leader, PI 6%
Staff/senior scientist 3%
Postdoc 23%
Science management 4%

Private & Public Sector (42%)

Scientist, team leader, manager R&D 20%
Staff, team leader, manager non-R&D 14%
Science manager/coordinator 2%
Consulting 6%

Other Profession (9%)

Media, publishing 3%
Patent attorney 2%
IT, software development 1%
Self employment 3%

Other (8%)

Other professions, internships, job applications, family management etc. 8%

Country Distribution

Europe (79%)

Austria 1%
Belgium 1%
Germany 59%
Luxembourg 1%
Malta 1%
Netherlands 2%
Norway 1%
Poland 1%
Spain 1%
Sweden 1%
Switzerland 7%
Turkey 1%
United Kingdom 5%

North America (15%)

Canada 2%
United States 12%

Asia / Australia (6%)

Australia 1%
China 1%
India 2%
Iran 1%
Qatar 1%
Saudi Arabia 1%
Singapore 1%

you for your contributions, through which the Culture Nights can continue to live and bring people of diverse backgrounds together.



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This call for donation is still open (www.alumni-goettingen.de/s/culturenights) and was made possible with the kind support of Alumni Göttingen.

