Cell News

Newsletter of the German Society for Cell Biology
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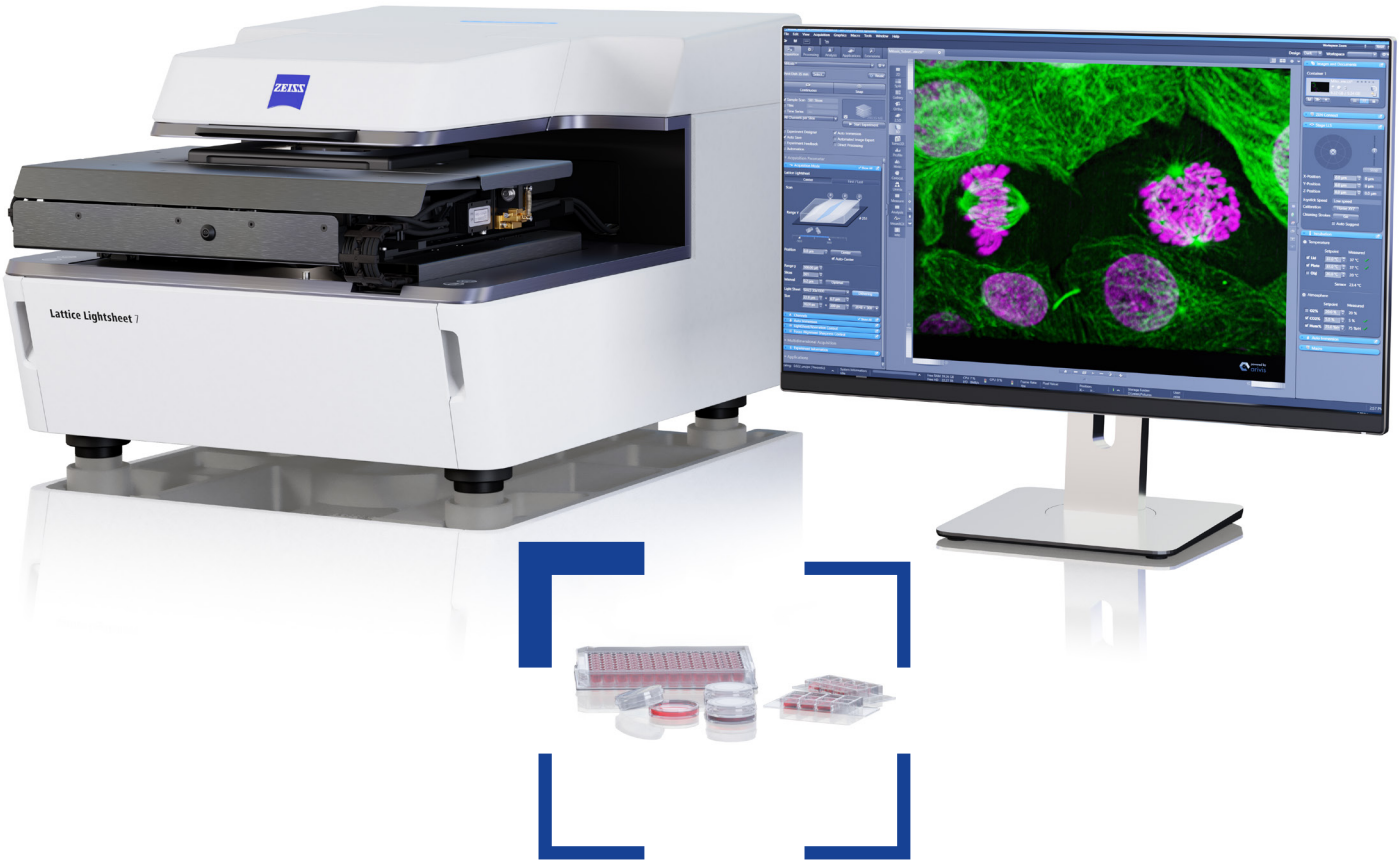
Volume 48, 1 2022

DGZ Focus Workshops
DGZ Awards 2022

Discovering the subcellular dynamics of life.



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Seeing beyond

CONTENT

Cover Image: Shown are logos for 6 of the 12 new DGZ work groups on topics across cell biology. Each work group is coordinated by two work group speakers who also organize a corresponding Focus Workshop (virtual webinar with four speakers ranging from early career scientists to established PIs; see Editorial for details). Logo designs by Shu Chian Tay and Diego Pitta de Araujo - Mechanobiology Institute, National University of Singapore.

Dear members and friends of the German Society for Cell Biology,

in the previous editorials, we have addressed the challenges that the SARS-CoV2 pandemic has brought to all of us and how DGZ has tried to cope with them. We sincerely hope that by now most of you have succeeded, at least in part and on a smaller scale, in resuming scientific exchange in face-to-face formats, while additionally maintaining virtual communication as a sustainable, efficient, and low-barrier format. However, with Russia's invasion of Ukraine end of February 2022, Europe was hit by another unprecedented and at times disillusioning crisis. Although as cell biologists our means of support for this conflict may seem minimal compared to our scientific input on a viral pandemic, we as a scientific community can stand together, support Ukrainian students and scientists, and instill democratic thinking among our trainees and colleagues on a daily basis. It was very encouraging that many European laboratories quickly came forward via public platforms to offer internships, jobs, and other support for Ukrainians. If you know talented Ukrainian cell biologists at various career stages, please encourage them to apply for our upcoming awards (see below), promote their visibility in your networks, invite them to our DGZ events, or develop creative ideas on how we may help them.

Despite these challenging times, we would also like to take the liberty of sharing our excitement about the DGZ's recent activities. This January, we were pleased to launch the new **DGZ Focus Workshop** series (via Zoom, every last Tuesday of the month, starting at 12 noon; https://zellbiologie.de/dgz-focus-workshops/). Each focus workshop is organized by the two spokespersons of the corresponding **DGZ work group**, and invited speakers range from late-stage PhD students to established PIs. The new work groups are intended to become a central structure of our society, through topic-based networking, contributions to our scientific meetings, evaluation of applications for meeting support, and more. In addition to the scientific breadth covered by the different work groups, we particularly appreciate the great diversity represented in the work group speakers (e.g., career stage, gender, scientific training, demographic background, host institutions). All Focus Workshops so far featured great science and scientists and led to active and stimulating discussions. The kick-off event was successfully masterminded by Dagmar Wachten and David Mick for the workgroup "Cilia and Centrosomes". Next, the Focus Workshop "Cytoskeleton and Mechanobiology" (Klemens Rottner and Franziska Lautenschläger) attracted a particularly large, discussion-hungry audience of cell biologists and biophysicists; Francesca Botanelli and Anne Straube brought together aficionados of "Membrane Trafficking and Molecular Motors" in April, and finally, May brought us the Focus Workshop "Physics of the Cell" organized by Alf Honigmann and Leonhard Moeckl. The consistently excellent presentations throughout all four workshops with their ensuing discussions are definitely encouraging and motivate us to continue with this monthly virtual event. In order to promote inclusion and expand the German Cell Biology network, the Focus Workshop series is currently open also to non-members. Nevertheless, we certainly hope that with these new activities we can convince the next generation of cell biologists of the many benefits of membership in our society. Please bear with us that the planned new DGZ website - with more functionality related to the working groups - is still a work in progress - we are on it. Until then, members can contact the spokespersons of the work groups and express their interest in joining a particular work group; multiple choices are of course possible. As always, we welcome your feedback to further enhance these new activities.

For more information on the workshops and all other activities of our society follow @DGZ_info on twitter and please also spread our announcements on your available social media channels.

We would also like to note that the calls for applications for our **2022 Science Awards** are open, with this year's deadline for applications being July 31, 2022. We kindly ask you to encourage your most talented young scientists and colleagues, etc. to apply. Briefly, applications are invited for the Nikon Young Scientist Award (for PhD students or early postdocs), the Walther Flemming Award (for senior postdocs and early group leaders), the Werner Risau Prize (endothelial cell biology; for young scientists within the first five years of their PhD), and the BINDER Innovation Prize (for young principal investigators with established own research profile). All calls can be found on the DGZ homepage (https://zellbiologie.de/akt-ausschreibungen/). The award presentations and award ceremony will take place at the end of the year as an online event. See also the article in this issue from last year's Nikon Young Scientist Award winner Katharina Scheibner.

Finally, planning is in full swing for the **International DGZ Meeting 2023**, likely as a face-to-face event in fall 2023, organized by Sandra Iden and colleagues; details and dates will follow. We would also like to draw your attention to "Life at the Edge: The nuclear envelope and nucleocytoplasmic transport" (July 20-24, 2022, Potsdam) and the symposium "Physics of Cancer" (September 28-30, 2022, Leipzig), both of which are supported by DGZ.

As always please feel free to share your thoughts and your criticisms on our activities.

Stay tuned and join us in shaping the future of cell biology in Germany.

Sandra Iden and Roland Wedlich-Söldner

Life at the edge: The nuclear envelope and nucleocytoplasmic transport

International Meeting of the German Society for Cell Biology (DGZ)

CONFIRMED SPEAKERS

Alwin Köhler
Vienna
Abby Buchwalter
San Francisco
Andre Hoelz
Pasadena
Anita Corbett
Atlanta
Christian Schlieker
New Haven
David Jans
Monash
Dirk Görlich
Göttingen
Patrick Lusk
New Haven
Rod Lim
Basel
Rose Goodchild
Leuven
Susan Gasser
Lausanne
Thomas Schwartz
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Wendy Bickmore
Edinburgh
Valerie Doye
Paris
Dorothee Dormann
Mainz
Edward Lemke
Mainz
Eric Schirmer
Edinburgh
Jeff Rothstein
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Karsten Weis
Zürich
Larry Gerace
La Jolla
Liesbeth Veenhoff
Groningen
Mark Field
Dundee
Martin Beck
Frankfurt
Mary Dasso
Bethesda
Maxi D'Angelo
La Jolla
Maya Capelson
Philadelphia
Megan King
New Haven
Mike Rout
New York
Naoko Imamoto
Hirosawa
Yaron Shav-Tal
Ramat Gan
Yuh Min Chook
Dallas

additional speakers will be selected from the abstracts

Potsdam, July 20-24, 2022

Kongresshotel, Potsdam

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REGISTRATION and ABSTRACTS
https://zellbiologie.de/en/meetings/
DEADLINE: APRIL 20, 2022

picture by Ralph Graf, Potsdam

Nikon Young Scientist Award

The definitive endoderm forms by epithelial cell plasticity during mouse gastrulation

Katharina Scheibner

Original publication

Scheibner, K., Schirge, S., Burtscher, I. et al. Epithelial cell plasticity drives endoderm formation during gastrulation. *Nat Cell Biol* 23, 692–703 (2021). https://doi.org/10.1038/s41556-021-00694-x.

The famous biologist Lewis Wolpert once said that it is not birth, marriage or death, but gastrulation, which is truly the most important time of our life. During gastrulation, the basic body plan is established and serves as a blueprint for the following extensive morphogenetic movements of cell populations[1–3]. During gastrulation and embryonic morphogenesis, epithelial-to-mesenchymal transition (EMT) and mesenchymal-to-epithelial transition (MET) are essential processes, however if dysregulated in adulthood lead to tumor cell dissemination. Although gastrulation serves as a model to understand processes such as EMT, cancer metastasis and stem cell differentiation, it is not fully understood in mammals.

Gastrulation, the formation of the three germ layers

During gastrulation epiblast cells differentiate into one of the three germ layers, the ectoderm, mesoderm or definitive endoderm lineage, that give rise to the major organs in the body[1]. As gastrulation starts, posterior epiblast cells undergo an EMT and ingress into the primitive streak (PS) region, which is a transient structure between the epiblast and visceral endoderm (VE) [1,4,5] (Fig. 1). Morphogen gradients along the anterior-posterior axis lead to high Wnt/β-catenin, TGF-β and FGF signaling at the posterior side of the embryo, which activates an EMT program, whereby columnar shaped epiblast cells lose their

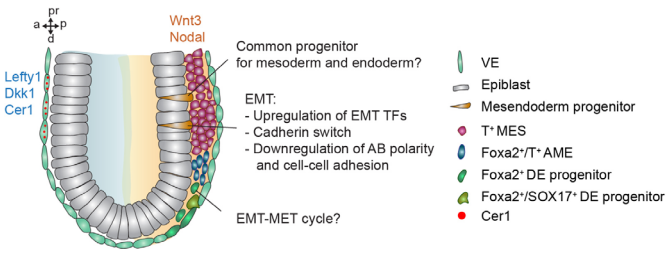

Figure 1. Current model of endoderm formation.

epithelial features by changes in gene expression, apical-basal polarity and cell-cell adhesion. At the same time, the cells downregulate E-Cadherin and upregulate N-Cadherin, Vimentin and α-Smooth muscle actin, resulting in the adoption of a mesenchymal state and finally ingression into the PS[6–10]. It has been generally accepted that DE progenitors undergo a further MET to differentiate into the endoderm germ layer[4,5,11–15]. However, this hypothesis is based on non-mammalian animal models and has never been formally proven in mammals[5]. Here, we discuss if the definitive endoderm lineage forms by a classical EMT process and further define the role of the transcription factor (TF) Foxa2 (master regulator of endoderm formation) during this process.

Revising the model of endoderm formation: classical EMT hallmarks are absent in endoderm progenitors

First, we observed that during gastrulation, endoderm progenitors express low levels of Foxa2, span a distal domain in the epiblast (Foxa2-Venus fusion^{low} epiblast progenitors (FVF^{low} EP)) and upregulate FVF while they leave the epithelium and differentiate into FVF^{high} transitory progenitor (FVF^{high} TP) (Fig. 2a, b). The FVF^{high} TP squeeze between the epiblast and VE layers, upregulate Sox17-Cherry fusion (SCF) before they intercalate into the VE giving rise to the FVF^{high}/SCF^{+} DE lineage[17–19] .To our surprise, we recently noticed that it only takes ~12 hours for FVF/SCF mESCs to differentiate from FVF^{low} progenitors into FVF^{high}/SCF^{+} DE[17,19]. Therefore, we were questioning if such a short timespan is sufficient for a cell to undergo molecular changes on mRNA and protein level that are required for an EMT-MET cycle. Therefore, we analyzed first whether FVF^{low} EP leave the epiblast epithelium by EMT in mid-streak (MS) stage embryos. FVF^{low} EP occupy a posterior epiblast region, suggesting that epiblast cells are already fate specified[18]. During the induction and elongation of the PS, FVF^{low} EP are found within the epiblast distal to the anterior PS (APS) region (Fig. 2a, a'). Single FVF^{high} TP appear within the FVF^{low} epiblast domain, leave the epiblast epithelium and flatten as elongated cells between the epiblast and VE (Fig. 2a-c, insets). This is in stark contrast to Brachyury (T)$^{+}$ mesoderm cells with a mesenchymal morphology that are found within the PS region (Fig. 2a-c). At MS stage, three distinct populations were apparent in the PS region (see scheme Fig. 2b'): A large T^{+} MES popu-

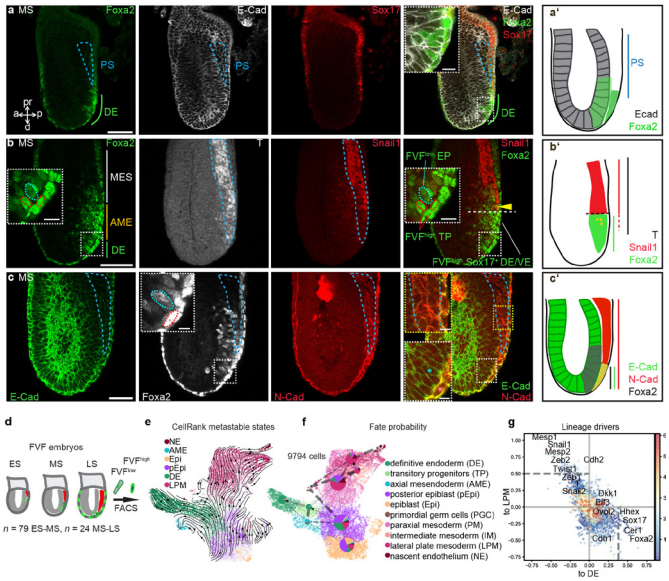

Figure 2. Endoderm progenitors do not show hallmarks of a complete EMT. (a) MS stage FVF/SCF embryo stained for Venus (Foxa2), E-cadherin and RFP (Sox17) (blue dashed line indicates PS). (b) Immunohistochemistry of MS stage FVF embryo stained for Venus (Foxa2), Snail1 and T. Yellow arrowhead indicates axial mesendodermal cells (AME) that synthesize Foxa2, T and Snail1 (b'). (c) MS stage FVF embryo immunostained for Venus (Foxa2, white), N-cadherin and E-cadherin. PS region is indicated by N-cadherin expression (blue dashed line, yellow box). (a', b') Depiction of Foxa2, T, Snail1 or Foxa2 and E-cadherin expression domains in gastrulating embryos based on panel a-c. (d) Scheme of FACS sorting of ES, MS and LS stage FVF embryos for scRNA-seq analysis. (e) UMAP plot with RNA velocity arrows, coloured by CellRank's metastable state assignment. Each shown tissue is either in the initial (epiblast (Epi)), intermediate (posterior epiblast (pEpi)) or final state (AME, definitive endoderm, lateral plate mesoderm (LPM) and nascent endothelium (NE)). (f) UMAP showing CellRank's fate probabilities of different tissues as pie charts. The dashed line indicates significant connections between clusters (PAGA graph model). Line with an arrow indicates consistent RNA-velocity between two clusters. The thickness of lines shows the confidence of the model. Solid line without arrow suggests a transition along the velocity between clusters but not unique flow. (g) Scatter plot of lineage drivers showing the correlation of the gene expression with the lineages DE or LPM, computed with CellRank. The top 50 correlated genes are indicated by a dashed horizontal and vertical line. Scale bar: 50 µm, insets 10 µm.

lation in the proximal PS region, a few Foxa2^{high}/T^{+} axial mesendoderm (AME) progenitors (Fig. 2b, b') and Foxa2^{high} TP distal to the APS (Fig. 2a, b, 2a', b')[18]. As expected, the EMT TF Snail1[8,9] is highly upregulated in T^{+} MES, however it is absent in Foxa2^{high} TP (Fig. 2b, b'). During a mesenchymal transition Snail1 downregulates E-Cadherin[8]. Simultaneously N-Cadherin is upregulated[20]. In line with this, the Snail1 expressing mesodermal cells within the PS show the well-described switch from E- to N-Cadherin during EMT (Fig. 2c). Contrary to mesoderm formation, FVF^{high} TP, DE and AME cells maintain E-Cadherin and concomitantly upregulate N-Cadherin (Fig. 2c). Next, we wanted to generate an *in vivo* roadmap of the molecular changes during gastrulation and therefore combined FVF lineage labelling and flow sorting of more than a 100 gastrulating mouse embryos to enrich for the rare transitory cell types and followed by high-throughput single cell RNA sequencing (scRNA-seq) (Fig. 2d). Then we used our previously established scVelo[21] and CellRank[22] algorithms to identify cell fate probabilities and lineage driver genes during mesoderm and endoderm segregation (Fig. 2e-g). This revealed that during endoderm formation, EMT TFs, such as *Snail1*, are downregulated, whereas *E-Cadherin (Cdh1)* is maintained (Fig. 2g). In contrast, during mesoderm transition an EMT TF program is upregulated and an *E- to N-Cadherin* switch. Together, these findings suggest that Foxa2^{low} EP differentiate into Foxa2^{high} TP that then ingress distal to the PS to form the Foxa2^{high}/Sox17^{+} DE in absence of a full EMT-MET cycle.

Endoderm forms independent of Snail1 function

Although we did not observe Snail1 expression during endoderm formation, we wanted to exclude a potential function for this

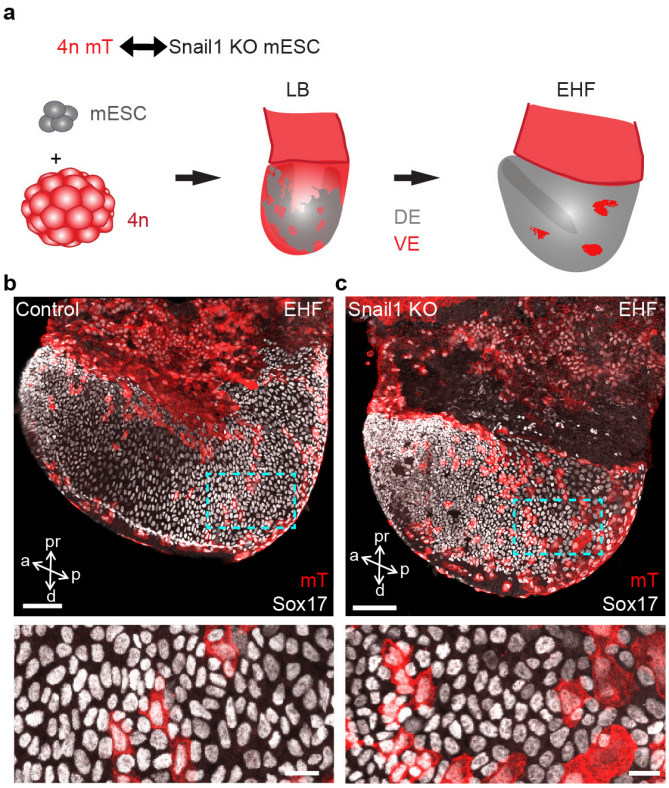

Figure 3. Snail1 is not required for endoderm formation. (a) Scheme for generation of tetraploid aggregation chimeras with Snail1 KO mESCs. (b) Maximum projection from confocal images of WT and (c) Snail1 KO chimeric embryos stained for RFP (mT) and Sox17 showing the dispersal of VE (mT^{+}) by Snail1 mutant or WT DE cells. Scale bar: 50 µm, insets 10 µm.

EMT TF during endoderm formation. Therefore, we generated a Snail1 knock-out (KO) mESC line and created mESC-derived embryos by tetraploid aggregation (Fig. 3a-c)[23]. This technique allowed us to analyze DE formation (derived from mESCs) and the dispersal of VE (derived from tetraploid embryo expressing membrane Tomato (mT)[24]). At early headfold stage (EHF), we observed that Snail1 KO mESC-derived DE intercalated into the VE and dispersed it, comparable to control chimeras (Fig. 3a-c). Altogether, these results demonstrate that the DE forms independent of the master EMT TF Snail1.

Foxa2 suppresses a complete EMT during endoderm formation

To better understand the function of Foxa2 during endoderm formation, we used our previously generated knock-in/knock-out Foxa2 reporter line[25] and created mESC-derived embryos using heterozygous Foxa2$^{Venus/+}$ and homozygous Foxa2$^{Venus/Venus}$ knock-in/knock-out mESCs by tetraploid complementation (Fig. 4a). To our surprise, we observed more Venus lineage labeled Foxa2 mutant cells with a high upregulation of the EMT TF Snail1 in the anterior PS region compared the control embryos (Fig. 4b-c). The upregulation of Snail1 upon the loss of Foxa2 indicates that Foxa2 represses the EMT TF Snail1 to protect the endodermal cells from undergoing a mesenchymal transition.

During endoderm formation Foxa2 prevents a mesenchymal transition

First we hypothesized that Foxa2 being a pioneer factor[26] may directly bind and regulate the Snail1 cis-regulatory elements, however ChIP-seq analysis of DE cells disproved this hypothesis (data not shown). Recent reports showed in different cancer and epithelial cell lines that TGF-β ligand 1[27] and Wnt/β-catenin[28–30] activation induces the expression of Snail1. In line with this, Wnt ligands, such as *Wnt3*, and target gene Lef1 are highly upregulated during mesoderm formation (Fig. 5a). In contrast, we observed the downregulation of Wnt ligands and Lef1 as well as the upregulation of secreted Wnt inhibitors, such as Cer1, during endoderm formation (Fig. 5a). Interestingly, the Wnt inhibitor Cer1 is already upregulated in Foxa2^{high} TP and DE at the posterior side of the embryos, which correlates with the downregulation of Lef1 (Fig. 5b). In line with our hypothesis that Foxa2 indirectly suppresses Snail1 by downregulation of canonical Wnt signaling, we observed an upregulation of Wnt target gene Lef1 and EMT TF Snail1 upon the loss of Foxa2 (Fig. 5c, d). Together, these findings suggest that Foxa2 directly induces the expression of Wnt inhibitors and thereby indirectly suppresses Wnt/β-catenin signaling and target genes, such as Lef1 and Snail1 (Fig. 5e)[28–32].

Dynamic molecular changes drive endoderm formation

To understand how the DE progenitors leave the epiblast and

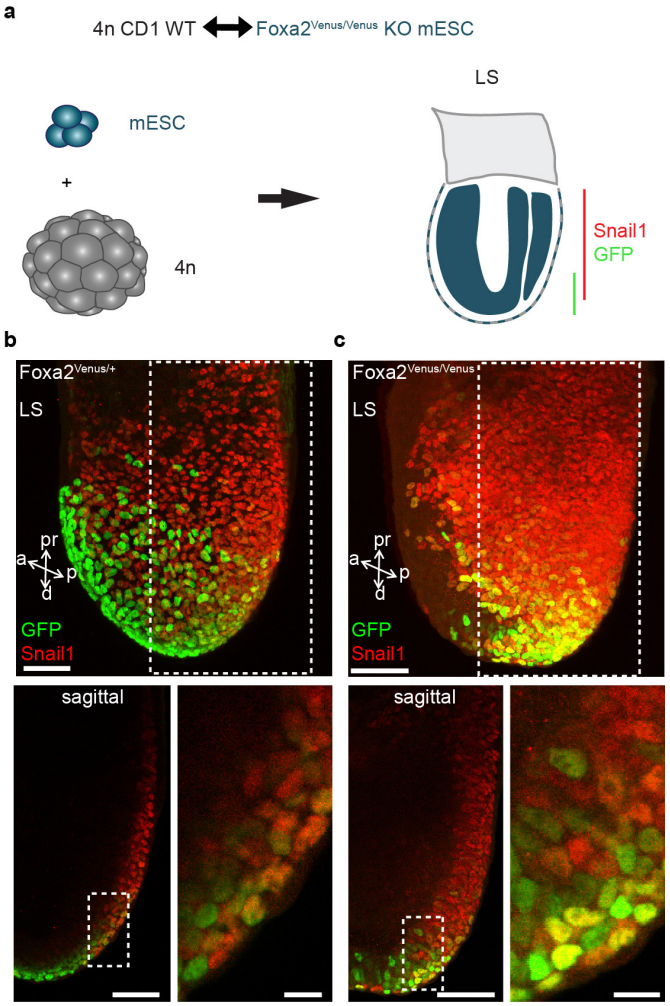

Figure 4. Snail1 is suppressed in the Foxa2 lineage. (a) Schematic illustration of the generation of tetraploid aggregation chimeras with Foxa2 KO mESCs. (b) Maximum projections of control and (c) Foxa2$^{Venus/Venus}$ KO aggregation embryos immunostained for GFP or Foxa2 and Snail1.

form the DE, we analyzed the expression of adherens junction (AJ) E-Cadherin and tight junction (TJ) protein Claudin7 and observed that they are downregulated in posterior epiblast cells compared to anterior epiblast (Fig. 6a, b). Next, we noted a high expression of metalloproteinases (MPs), that are required for basement membrane (BM) remodeling, in endoderm progenitors and that correlates with the destruction of the BM in the Foxa2^{+} pEpi [33] (Fig. 6c, e). Furthermore, Foxa2^{low} EP transiently downregulate apical-basal (AB) polarity and TJ genes and proteins when they differentiate towards Foxa2^{high} TP and DE (Fig. 6d), probably due to a lacking BM. Altogether, the formation of the DE lineage shows features of an epithelial cell plasticity program, such as simultaneous expression of E- and N-Cadherin and a transient downregulation of polarity and cell adhesion proteins[20,34].

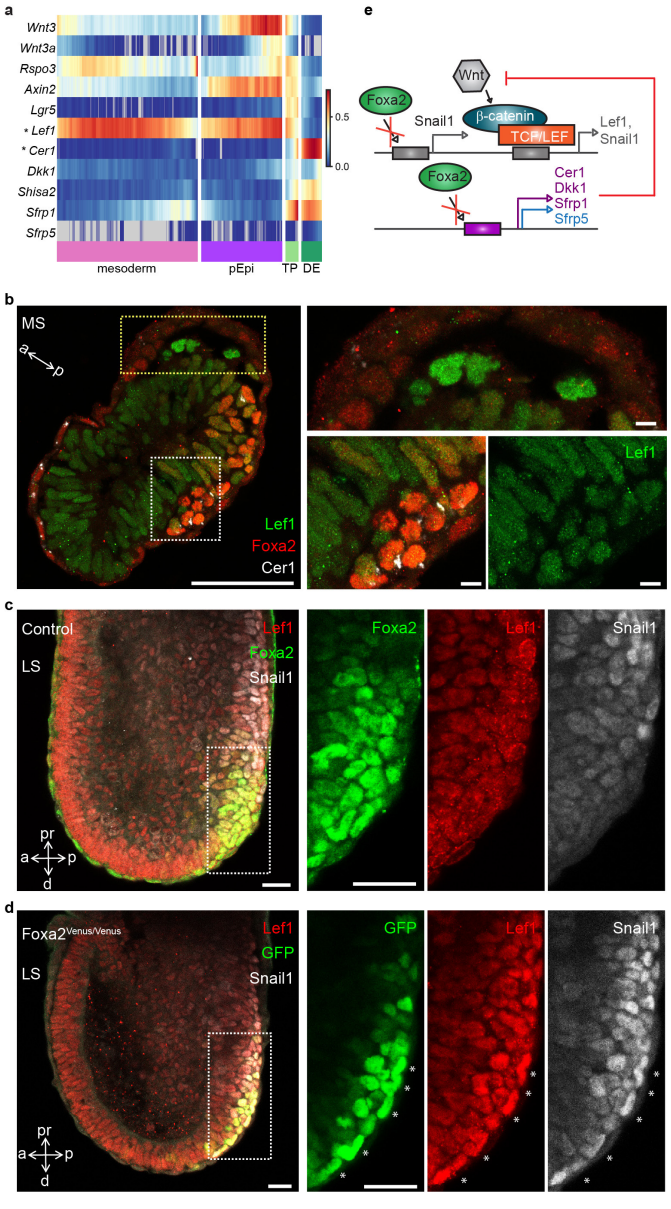

Figure 5. Foxa2 indirectly suppresses a complete EMT program by upregulation of Wnt signaling inhibitors. (a) Clustered heatmap showing the smoothed (sliding window of n=100 cells) and scaled gene expression of Wnt signaling genes in mesoderm (PM, IM, LPM, NE), pEpi, TP and DE. (b) Confocal image of a transverse section through a MS stage embryo immunostained for Foxa2, Lef1 and Cer1. (c) Maximum projections of control and (d) Foxa2$^{Venus/Venus}$ KO aggregation embryos immunostained for GFP or Foxa2, Snail1 and Cer1. (e) Model illustrating how Foxa2 inhibits a full EMT in endoderm. Purple and grey boxes represent the TF binding sites of gene specific promoters. Scale bar 50 µm, insets 10 µm.

The proposed model and its far-reaching implications

During gastrulation the germ layers are specified, rearranged, and shaped into a body plan. However, the mechanistic understanding of cell fate specification and tissue patterning to give

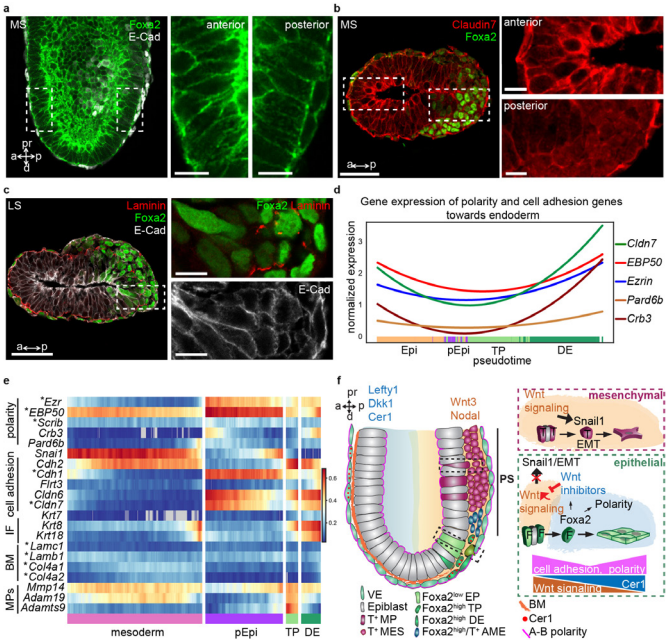

Figure 6. Foxa2^{+} epiblast progenitors leave the epithelium by remodeling of BM, AB polarity and cell adhesion. (a) Representative image of a MS stage embryo stained for Foxa2 and E-cadherin. (b) Transverse sections of a wildtype embryos immunostained for Foxa2 and Claudin7, (c) Foxa2, Laminin, E-cadherin. (d) Expression of polarity and cell adhesion genes along diffusion pseudotime from Epi, pEpi, TP to DE in a quadratic spline plot (e) Clustered heatmap showing the smoothed (sliding window of n=100 cells) and scaled gene expression of polarity, cell adhesion, intermediate filaments (IF), basement membrane (BM), metalloproteinases (MPs) in mesoderm (PM, IM, LPM, NE), pEpi, TP and DE. (f) Model of endoderm formation by partial EMT. Scale bar: 50 µm insets 10 µm.

rise to organs is not well understood. This knowledge is crucial for in vitro differentiation protocols that mimic embryonic development to generate fully differentiated cell types from human embryonic stem cells, for cell replacement therapies. Furthermore, dynamic changes in cell identity between epithelial and mesenchymal states is fundamental during gastrulation, however if uncontrolled leads to cancer metastasis in adulthood. Here we show a novel concept of germ layer formation during gastrulation (Fig. 6f). Prior to gastrulation, mesoderm and endoderm progenitors are already specified in the posterior epiblast. Mesoderm progenitors undergo an EMT, ingress into the PS and acquire a mesenchymal fate. In contrast, during endoderm formation the BM is remodeled and AB polarity proteins transiently downregulated – characteristics of a partial EMT program. During this process EMT TFs were absent, while the expression of cell-cell adhesion protein E-Cadherin was maintained [4,5,11–15]. The simultaneous expression of E- and N-Cadherin in the nascent DE and VE likely promotes the segregation of the endoderm from the mesoderm germ layer by differential cell adhesion [35].

Importantly, Foxa2 functions as an epithelial gate keeper and

EMT suppressor to prevent a mesenchymal transition in endoderm progenitors. Foxa2 suppresses EMT TF activation by upregulation of canonical Wnt/β-catenin signaling inhibitors. These findings are fundamental to understand basic mechanisms of gastrulation, and furthermore have broader implications, as EMT leads to cancer cell metastasis. Thus far, tumor cell dissemination was always correlated with EMT however recent findings propose an EMT-independent mechanism of cancer cell dissemination, invasion and metastasis in pancreatic cancer[34,36,37]. Thus, epithelial cell plasticity might allow cancer cell dissemination and metastasis and further mechanistic studies could provide novel targets for cancer therapy. Altogether, our discoveries do not only revise the formation of the endoderm germ layer but could also advance cell replacement therapy and cancer treatments.

Acknowledgment

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Curriculum Vitae

Katharina Scheibner,
Postdoc, Institute of Diabetes and Regeneration Research (IDR), Helmholtz Diabetes Center (HDC) at Helmholtz Center Munich

Email katharina.scheibner@helmholtz-muenchen.de

Academic degrees

2021	PhD, Institute for Diabetes and Regeneration Research, Helmholtz Center Munich, Germany; Prof. Heiko Lickert, Title: *'Understanding endoderm and endocrine lineage formation for improved stem cell-derived β-cell formation.'* Overall mark: *summa cum laude*.
2015	Master Degree in Biological Sciences, Westfälische Wilhelms-University of Muenster, Germany, Supervisor: Prof. Dr. Wiebke Herzog, Title: *'The role of epithelial to mesenchymal transition during mouse endoderm development.'*
2011	Bachelor Degree in Life Science Engineering, University of Applied Sciences Berlin, Title: *'Investigating the putative application of fragment analysis for sexing of South African bird population.'*

Professional career

Since July 2021	Junior group leader, Beta cell replacement, Institute of Diabetes and Regeneration Research, Helmholtz Center Munich, Germany
2020 - 2021	Postdoc, Institute of Diabetes and Regeneration Research, Helmholtz Center Munich, Germany
2016 - 2020	PhD student, Institute of Diabetes and Regeneration Research, Helmholtz Center Munich, Germany
2014	Internship in Developmental and Regenerative biology, Icahn School of Medicine at Mount Sinai, New York City, Supervisor: Prof. Dr. Kirsten Sadler-Edepli. https://nyuad.nyu.edu/en/academics/divisions/science/faculty/kirsten-sadler-edepli.html
2013	Internship in Immunogenicity/ immunomodulation profiles of cells and biomaterials, Berlin-Brandenburg Centre for Regenerative Therapies (BCRT), Germany, Supervisor: Prof. Dr. Martina Seifert. https://b-crt.de/en/research/research-fields/immune-system/immune-monitoring/immunogenicity/
2012	Internship in Therapeutic cell initiative, Roche Diagnostics GmbH, Germany, Supervisor: Dr. Markus Neubauer
2011	Bachelor thesis in genome sequencing at Inqaba Biotechnical Industries Ltd, Pretoria, South Africa, supervisor: Dr. Preisig. https://www.inqababiotec.co.za/southern-africa-subsidiary/

Honors, Awards and Grants

2021	Nikon Young Scientist Award, Nikon GmbH and the German Society for Cell Biology (DGZ)
2021	German Stem Cell Network (GSCN) Publication of the Year Award
2018	DZD Poster Award
2018	German Stem Cell Network (GSCN) Poster Award
2014	Scholarship from DAAD for a research internship at Mount Sinai Hospital in NYC, USA

International conferences

2021	German Stem Cell Network (GSCN) Heidelberg, Germany. Oral presentation: 'Epithelial cell plasticity drives endoderm formation during gastrulation'
2020	Keystone symposia, Islet Biology: From Gene to Cell to Micro-Organ, New Mexico, USA. Oral presentation: 'New Approaches to Produce Beta Cells from Human Stem Cells'
2019	Nature conference, Advanced Cell Therapies and Tissue Engineering, Milan, Italy. Oral presentation: 'New Approaches to Produce Beta Cells from Human Stem Cells'
2018	German Stem Cell Network (GSCN), Heidelberg, Germany. Poster title: 'Epithelial to epithelial transition (EET): a novel pathway independent of EMT for endoderm formation'

Top Selected publications (peer reviewed)

H-index: 7 (google scholar_May 2022)

1. **Scheibner K.***, Schirge S.*, Burtscher I.*, Yang D., Sterr M., Yang D., Irmler M., Beckers J., Cernilogar F., Schotta G., Lickert H. **Epithelial cell plasticity drives endoderm formation during gastrulation**. Nature Cell Biology, 2021, doi: 10.1038/s41556-021-00694-x.

2. Salinno C., Büttner M., Cota P., Tritschler S., Tarquis-Medina M, Bastidas-Ponce A., **Scheibner K.**, Burtscher I., Böttcher A., Theis F., Bakhti M., Lickert H. **CD81 marks immature and dedifferentiated pancreatic β-cells**. Molecular Metabolism. 2021 Feb 6; https://doi.org/10.1016/j.molmet.2021.101188

3. Mahaddalkar P.U. *, **Scheibner K.***, Pfluger S., Ansarullah, Sterr M., Beckenbauer J., Irmler M., Beckers J., Knöbel S, Lickert H. **Generation of pancreatic β-cells from CD177+ anterior definitive endoderm**. *Nature Biotechnology*. 2020, doi: 10.1038/s41587-020-0492-5 (*Co-first authors).

4. Bakhti, M. +, *, **Scheibner K.***, Tritschler S, Bastidas-Ponce A., Tarquis-Medina M., Theis F.J., Lickert H+. **Establishment of a high-resolution 3D modeling system for studying pancreatic epithelial cell biology in vitro**. *Molecular Metabolism*. 2019 Sep 12; https://doi.org/10.1016/j.molmet.2019.09.005 (*Co-first author; +Co-corresponding).

5. Bastidas-Ponce A*, Tritschler S*, Dony L, **Scheibner K**, Tarquis-Medina M, Salinno C, Schirge S, Burtscher I, Böttcher A, Theis FJ+, Lickert H+, Bakhti M+. **Comprehensive single cell mRNA profiling reveals a detailed roadmap for pancreatic endocrinogenesis**. *Development*. 2019 Jun 17;146(12) (*Co-first author; +Co-corresponding).

6. **Scheibner, K.***; Bakhti, M. *; Bastidas-Ponce, A.; Lickert, H. Wnt signaling: Implications in endoderm development and pancreas organogenesis. *Curr. Opin. Cell Biol.* 2019 61, 48-55 (*First co-authors).

7. Cernilogar, F.M ; Hasenöder, S.# ; Wang, Z.# ; **Scheibner, K.#** ; Burtscher, I. ; Sterr, M. ; Smialowski, P. ; Groh, S. ; Evenroed, I.M. ; Gilfillan, G.D. ; Lickert, H.° ; Schotta, G. **Pre-marked chromatin and transcription factor co-binding shape the pioneering activity of Foxa2**. *Nucleic Acids Res.*, (2019) (#Second co-authors).

8. Bastidas-Ponce A*, **Scheibner K***, Lickert H, Bakhti M. **Cellular and molecular mechanisms coordinating pancreas development.** *Development.* 2017 Aug 15;144(16):2873-2888. Review. (*First co-authors).

WALTHER FLEMMING AWARD 2022

The German Society for Cell Biology (DGZ) and ibidi GmbH offer the "Walther Flemming Award" for excellent research in cell biology. The award consists of a financial contribution of EUR 3000 and is given to senior postdoctoral researchers and early career group leaders for recent work that defines their emerging independent research profile.

Candidates need to be members of the DGZ and can either be nominated or apply directly for the prize.

Applications should be submitted in a single pdf file and consist of cover letter, CV and copies of 1-3 publications that document the relevant work of the applicant. Applications will be reviewed by a dedicated award committee of the DGZ.

Please send your application by e-mail to the DGZ office:
dgz@dkfz.de

Deadline: July 31, 2022

NIKON YOUNG SCIENTIST AWARD 2022

The German Society for Cell Biology (DGZ) and Nikon GmbH (Business Unit: Microscope Solutions) annually offer the "Nikon Young Scientist Award" for excellent research in cell biology by PhD students or young postdoctoral researchers within 3 years after graduating (an extension of up to 2 years will be granted for periods of parental leave). The awardee will receive a financial contribution of EUR 1500.

Candidates need to be members of the DGZ and can either be nominated or apply directly for the prize.

Applications should be submitted in a single pdf file and consist of cover letter, CV and copies of publications that document the work of the applicant. Applications will be reviewed by a dedicated award committee of the DGZ.

Please send your application by e-mail to the DGZ office:
dgz@dkfz.de

Deadline: July 31, 2022

BINDER INNOVATION PRIZE 2022

The BINDER Innovation Prize is sponsored by BINDER GmbH in Tuttlingen since 1998 and annually awarded by the German Society for Cell Biology (DGZ). The award is given for outstanding contributions to cell biology and consists of a financial contribution of EUR 4000. It is aimed at junior investigators that have already established and developed their own research profile. Candidates need to be members of the DGZ and can either be nominated or apply directly for the prize.

Applications should be submitted in pdf format and consist of cover letter, CV, a research profile and copies of three selected first/last author publications. Applications will be reviewed by a dedicated award committee of the DGZ.

Please send your application by e-mail to the DGZ office: dgz@dkfz.de

Deadline: July 31, 2022

WERNER RISAU PRIZE 2022

for Outstanding Studies in Endothelial Cell Biology

The German Society for Cell Biology (DGZ) and the Werner-Risau-Prize Committee annually award the "Werner-Risau Prize for outstanding studies in endothelial cell biology" to a candidate within the first five years after obtaining their PhD or MD (an extension of up to 2 years will be granted for periods of parental leave). The prize will be awarded for an article already published or in press. The awardee will receive a financial contribution of EUR 4000.

For details visit: http://www.werner-risau-prize.org

Applications should be submitted in a single pdf file and consist of cover letter, CV and a copy of the relevant publication.

Please send your application to the Werner Risau Prize Committee at:
hugo.marti@physiologie.uni-heidelberg.de

Deadline: July 31, 2022

12th International Symposium 'Physics of Cancer'

August 30 – September 1, 2021 (Leipzig, Germany)

Cancer is one of the most persistent challenges facing healthcare systems worldwide and a human tragedy still afflicting far too many individuals. To fight cancer, we must truly understand this incredibly diverse and complex disease. Cancer is just as diverse as any cell that has gone through myriads of cycles of evolution. Yet, there are general patterns of malignant tumor behavior that are dictated by the laws of physics and exist independently of the diverse biochemical landscape within a tumor. Identifying these physical patterns of tumor behavior, understanding them mechanistically, and ultimately translating them into diagnostic and therapeutic strategies is the goal of the research area "Physics of Cancer".

The search for basic principles and mechanistic paradigms of cancer is becoming more and more important, complementing our increasingly complex and diverse knowledge of molecular details. Medical cancer research is strongly benefitting from the neighboring disciplines, such as bioinformatics or systems biology. In particular, the physics of soft condensed matter plays a central role in this context. Today, it becomes increasingly clear that the reductionist agenda of the physical approach is contributing essential insight into the physical foundations of cancer.

The 12th International Symposium 'Physics of Cancer' has highlighted the latest developments in this field. It took place from August 30th to September 1st at the Center for Biotechnology and Biomedicine of the University of Leipzig. The focus topics for this year's symposium were: Magnetic resonance elastography in the context of cancer, 3D tumor models, and nuclear mechanotransduction. In addition to the founders of the annual meeting Prof. Josef Käs and Prof. Harald Herrmann, this year's conference was organized by Ingolf Sack (Charité University Hospital Berlin), Ben Fabry (FAU Erlangen), Elisabeth Fischer-Friedrich (Biotec, TU Dresden) and Thomas Fuhs (Leipzig University, Germany).

Despite the COVID-19 Pandemic and the travel restrictions that affected the conference already last year, we could again demonstrate that scientific exchange is possible even in adverse conditions. To reach a global audience, and to allow international contributions to the conference, it was simultaneously held in person at the University of Leipzig, and streamed to the online audience. Also the speakers gave their talk online and offline depending on their location, the talk schedule was optimized such that all speakers, from China to the US west coast could give their talks live at reasonable local times. The continued international interest in our annual conference was unbroken by the circumstances and again more than 70 participants from all around the world joined, 25 of them could attend the conference in Leipzig, while the rest joined the online part of the conference. There were 22 invited and 9 contributed talks selected from the submitted abstracts. Of all 31 speakers, 12 were female. 17 posters were submitted and displayed at this year's meeting. The following sections highlight some particularly relevant talks from the different sessions and provide and excerpt-like summary of the conference.

First day:

The symposium was opened by a talks from Xavier Trepat (IBEC Barcelona) and Matthias Lütolf. Both groups investigate the development and folding of the intestinal epithelium. The Trepat group investigated the forces the cells generate within a flat two dimensional sheet that lead to the folding into a three dimensional structure with crypts and villus regions. The Lütolf lab started with a prestructured substrate and demonstrated that the 3 dimensional shape of the environment is an important guidance cue for the differentiation of stem cells into different intestinal epithelial cells. Yanlan Mao (University College London, GB) talked about the mechanical basis of epithelial tissue repair. With a quantitative analysis of wound morphology over time she showed how wound closure happens in different phases, and how theese depend on cell contractility ans tissue fluidity.

The second session on Monday was a focus session on Magnetic Resonance Elastography (MRE). Jens Würfel (U Basel, CH) and John Huston III (Mayo Clinic, USA) talked about clinical applications of MRE for brain tumors. Assessing the stiffness of meningiomas with MRE helps neurosurgeons in their preparation for invasive surgery. They also conducted research on vestibular schwannomas and gliomas, showing that gliomas are softer than normal brain parenchyma and that glioma stiffness decreases with increasing malignancy. They use slip interface imaging on the MRE as key diagnostic tool that provides knowledge regarding the brain tumor adhesion prior to surgery, which allows to estimate length and complexity and likelihood of complete tumor resection. Marvin Doyley (U Rochester, USA), used the MRE to evaluate how the shear modulus of pancreatic tumor tissue influence the response to neoadjuvant therapies and the delivery of the chemotherapy agents to the tumor.

Second day:

The Tuesday started with the continatuion of the focus session on MRE. Jing Guo (Charité Berlin, DE) gave a detailed introduction on the technique from the physical point of view and showed the clinical application assessing the aggressiveness of rectal tumors. Liang Zhu (Peking Union Medical College Hospital, CN) presented a clinical perspective on MRE for diagnosis of pancreatic cancer.

The poster session provided a good opportunity for young researchers to present their work. The highlight of Tuesday was the bestowal of the **young scientist award** (funded by the DGZ) for the best three posters. The poster prize was split as equal first prizes to Maxx Swoger (U Syracuse, USA, Patteson Lab) who presented his outstanding work on "Vimentin intermediate filaments mediate cell shape on viscoelastic substrates". Kajangi Gnanachadran (Polish Academy of Sciences, Lekka lab) for a presentation on 3D multicellular spheroids as an in vitro model for bladder cancer. And Hans Kubitschke (U Leipzig, Käs Lab) for beautiful work and presentation on the interplay of connective tissue and cancer.

The afternoon session started with another clinical talk by Richard Barr (Northeast Ohio Medical University, USA). He reported how ultrasound elastography is already in use in cancer detection and diagnosis. Thomas Fuhs (U Leipzig, DE) presented a multiscale approach to link the macroscopic mechanical properties, felt by palpation, to the viscoelasticity of isolated single cancer cells. Ovijit Chaudhuri (Stanford University, USA) presented his studies on viscoelasticity and plasticity of ECM and tissue. He laid a special focus on the influence of viscoelastic ECM on cancer progression.

Third day:

Thursday was a day packed with exciting talks, starting with Cornelia Monzel (U Düsseldorf, DE) who presented a new tool to manipulate genetic pathways using magnetic nanoparticles. Otger Campàs (TU Dresden, DE) investigated the shape control during embryonic development of zebrafish. Using magnetic microdroplets as force sensors and transducers, they were able to study the intercellular forces within the embryos.

The second session took a deep look into the cells onto the individual cytoskeleton filaments. Elisabeth Fischer-Friedrich (TU Dresden, DE) talked about tension-sensitive binding of actin cross-linkers in live cells. Through a combination of AFM and FRAP she was able to investigate tension dependent binding kinetics of α-actinin crosslinkers. Sarah Köster (U Göttingen, DE) presented detailed research on the mechanical properties of vimentin and keratin filaments. This detailed look revealed, that even though both are intermediate filaments, their mechanical properties and bundling dynamics are surprisingly different.

Stepping out a bit again, the third session focused on cell mechanics. Malgorzata Lekka (Polish Academy of Sciences) demonstrated that the mechanical properties of single tumor cells are correlated with the aggressivity of bladder tumors. Franziska Lautenschläger (U Saarland, DE) presented work on microtentacle formation, and how this is regulated by the stiffness of the actin cortex of the cell. Johanna Ivaska (U Turku, FI) talked about how tissue and ECM stiffness acts as a migration cue in durotaxis and supports cell proliferation in cancerous tissue. And how this regulates the actin cytoskeleton and cellular adhesion and motility.

The final session started with a talk by Lance Munn (Harvard Medical School, USA) that was devoted to the mechanical changes caused by tumors. He demonstrated that tumour generates solid stress and the resulting compressive forces affect drug delivery, blood perfusion, cell viability. Alleviating of stiffness and solid stress can enhance anti-tumour immunity and improve therapy. Paul Janmey (U Pennsylvania, USA) presented the mechanical role of vimentin in cells under compression, and how this can protect the nucleus from external pressure. The final talk of the conference was given by Ming Guo (Massachusetts Institute of Technology, USA). He showed his group's recent work in mapping the spatial and temporal evolution of cell positions and local stresses. He demonstrated that control of the structure and function of three dimensional multicellular tissues depends critically on these.

Summary:

In summary, despite the circumstances, 2021 was yet another successful year for Physics of Cancer. The meeting has shown again, that an exciting meeting can be held without the physical presence of everybody in the same room. The meeting remains an exciting meeting of many of the top minds in this highly interdisciplinary field. As our understanding of the physical bases underneath many types of pathologies increases, so does the breadth of the conference. This was reflected in the speaker list, which spanned a wide arch from translational medicine, to the molecular details that govern the physics of cancer. This year's special focus was on Magnetic Resonance Elastography, which was reflected in exceptional talks given on the topic. In closing, the conference remains an important meeting point for top minds in the field, and we hope to be able to welcome more guest in person for the next conference, but we plan to continue the online part of the conference to facilitate the participation of international contributors.

Acknowledgements:

This international meeting was supported by the German Research Foundation (DFG, **FU 1059/4**) and the German Society for Cell Biology (DGZ). Additionally, it was sponsored by Graduate School BuildMoNa, PbF 1: Top level research areas: Multifunctional materials and processes from Molecules to Nanodevices and ibidi GmbH.

Join us!
13th Annual Symposium "Physics of Cancer"

Andrew Clark
(University of Stuttgart, Germany)

Jacopo Ferruzzi
(UT Dallas, USA)

Peter Friedl
(The University of Texas, USA)

Helmut Hanenberg
(University Hospital Düsseldorf, Germany)

Carl-Philipp Heisenberg
(ISTA, Austria)

Young-Wook Jun
(UCSF, USA)

Cécile Leduc
(Institut Jacques Monod, France)

Rudolf Leube
(University Hospital RWTH Aachen, Germany)

Christoph Mark
(FAU Erlangen-Nuremberg, Germany)

Athina E. Markaki
(University of Cambridge, UK)

David Odde
(University of Minnesota, USA)

Wolfgang Parak
(University of Hamburg, Germany)

Cynthia Reinhart-King
(Vanderbilt University, USA)

Heiko Rieger
(Saarland University, Germany)

Tilman E. Schäffer
(University of Tübingen, Germany)

Simone Schürle-Finke
(ETH Zurich, Switzerland)

Ulrich Schwarz
(University of Heidelberg, Germany)

Cornelis Storm
(Eindhoven University of Technology, NL)

Erdem Tabdanov
(The Pennsylvania State University, USA)

Denis Wirtz
(Johns Hopkins University, USA)

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— The Organizing Committee —

Josef Käs
(University of Leipzig, Germany)

Cornelia Monzel
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Meeting Report DGZ study group "Signal Transduction": 24th Meeting on Signal Transduction 2021 by the Signal Transduction Society (STS)

The STS-Poster prizewinner (from left to right): Cristina Maria Chiarolla, Sevinj Sultanli, Miriam Kelm, Hagen Bachmann, Viktoria Fuhr, Bernd Bufe

Once again, the year 2021 was dominated by the SARS-CoV-2 pandemic and only very few meetings were held in an on-site format, albeit with limited numbers of participants. One of these rare events was the 24th Meeting on Signal Transduction 2021 that took place from November 15 to 17, 2021, at the Leonardo Hotel Weimar. Due to the implementation of a stringent hygiene concept, including the maximum number of 93 scientific participants, an adapted meeting program, a highly cooperative hotel management, and a relative low infection rate at that date, the Signal Transduction Society (STS) decided to perform the year's 2021 annual Meeting as in-person conference. The meeting was organized in cooperation with the signaling study groups of the German Societies for Cell Biology (DGZ), for Immunology (DGfI), for Biochemistry and Molecular Biology (GBM), and for Pharmacology (DGP). The collaborative research center (SFB) 854 "Molecular Organization of Cellular Communication in the Immune System" provided further scientific and financial support. Besides the more traditional workshops, a special workshop on "Target Identification and Interaction" had been organized. The new meeting schedule started at noon on Monday and ended at noon on Wednesday, ensuring a timely and convenient arrival and departure for the majority of participants. All workshops were opened by keynote speakers introducing the scientific field and their recent research, which were followed by three to four 15-minutes oral presentations that had been selected from the submitted abstracts by the respective workshop chair people. The special workshop on 'Target Identification and Interaction' was opened by two complementing keynote presentations. Since a 'classical' poster exhibition with intensive personal discussions was not allowed, all posters were presented as five-minutes short talks in one of the two "My Poster in a Nutshell" sessions.

The workshop on 'Tumor Biology and Immunity' was supported by the DGZ study group, who invited Gudula Schmidt (University Freiburg) as a keynote presenter. Gudula Schmidt opened the workshop with a concise presentation of her research on how bacterial toxins modulate signaling via small GTPases especially in cancer. Schmidt's group could demonstrate that cytotoxic necrotizing factors (CNF) can induce an invasive phenotype in breast epithelial cells by activating RhoGTPases, increasing COX-2 and GPCR5A expression and by modulating EGF-dependent signaling. Gudula Schmidt also introduced two new tools for delivery of numerous proteins, e.g. toxins, into cells. The Photorhabdus luminescence toxin complex (PTC), a heterotrimeric protein complex consisting of the subunits TcA, TcB and TcC, is able to deliver diverse protein toxins into mammalian cells. It can be engineered in multiple ways so that it serves as a vehicle for transport and injection of diverse enzymes and peptides of foreign origin. Moreover, Gudula Schmidt presented the affibody technology for modulation of Rho signaling and highlighted the possibility of PTC-mediated delivery of affibodies.

The workshop 'Differentiation, Stress, and Death' was introduced by Wolfgang Schamel from the BIOSS Centre for Biological Studies (Freiburg) focusing on his recent research on the kinetics of the T-cell receptor (TCR) - ligand interaction by the use of optogenetically-induced TCR signaling. With this technique the half-life of TCR - ligand binding was determined and uncovered as a central contributing factor of downstream signaling.

Volker Dötsch (Goethe University, Frankfurt am Main) presented the keynote lecture in the Workshop on 'Protein Interaction and Signaling'. His talk entitled 'Mechanism of genetic quality control in oocytes' highlighted the function of TAp63α, one isoform of p63 highly expressed in oocytes, in death regulation. V. Dötsch's group discovered that TAp63α is activated in a highly ordered multistep phosphorylation process involving Casein kinase 1 (CK1) and Checkpoint kinase 2 (CHK2). The accurately resolved CK1/TAp63α substrate interaction precisely demonstrates that the kinetic of phosphorylation and the conformational changes in p63 determines the oocyte fate after DNA damage.

Immune Cell signaling has always been a hot topic at the STS Meeting. Due to a short-notice change in the program, Friederike Berberich-Siebelt (University Würzburg) and Dirk Brenner (University Luxemburg) presented two highly interesting talks. F. Berberich-Siebelt focused her talk on the possibility to perform gene editing on primary T cells and presented an easy as well as inexpensive CRISPR/Cas9-based method to perform gene editing in primary murine T cells. Her group established nucleofection of guide RNA in activated and even naïve CD3+ T cells derived from Cas9 transgenic mice for efficient gene editing. Moreover, she nicely discussed the possibility of expanding this approach in a translational setting. Regulatory T cells (Tregs) and oxidative phosphorylation events were the topic of Dirk Brenner. Tregs maintain immune homeostasis and prevent autoimmunity. Amongst others, D. Brenner showed that Glutathione restricts serine metabolism and modulates FoxP3 expression to preserve regulatory T cell function. These discoveries might help to develop new strategies to tackle autoimmunity or cancer.

The Workshop on 'Infection and Inflammation' started with Marco Binder's talk on age-related infection with SARS-CoV-2. Marco Binder (DKFZ, Heidelberg) and colleagues investigated nasal swabs form children and adults to uncover mechanism that might protect young children from infection. By a single cell approach no differences in virus entry receptors were discovered but the expression of recognition receptors that determine the intracellular virus detection by innate immune cells were increased in children, thereby increasing type I Interferon (IFN) and Interferon-stimulated gene response in the presence of SARS-CoV-2.

Poster discussion under pandemic circumstances.

For the special workshop on 'Target Identification and Interaction' two keynote speaker were invited. Paul Lieberman (Wistar Institute, Philadelphia, USA) talked about the development of Epstein-Barr virus (EBV) associated diseases and the development of new drugs. EBV infections are associated with 1 % of cancers and a variety of other human disorders, but no specific EBV treatment is available. Paul Lieberman's group is highly engaged in developing small molecule inhibitors. One candidate out of 2000 synthesized molecule, described in his talk, met the standards required for getting tested in further clinical trials. Guido Franzoso (Imperial College, London, UK) focused on the NF-κB pathway in cancer therapy. He illustrated different approaches that had been used to inhibit NF-κB or its upstream regulators and introduced the work of his lab on the immediate-early gene 'Growth Arrest and DNA Damage 45B' (GADD45B) as a novel transcriptional target of NF-κB. Silencing of GADD45B induced apoptosis via MKK7 and the small peptide inhibitor DTP3 was able to interrupt the GADD45B interaction with MKK7 resulting in MKK7-mediated cell death.

Early career researchers are especially recognized at the STS Meetings and it is a good tradition, that all abstracts are presented to the auditorium. Because discussions at the poster were not allowed in the ordinary way, each poster was presented in the 'My Poster in a Nutshell' sessions as five-minute short talks. After the short talk session, all poster presenters could make individual appointments with interested participants in the poster exhibition area. Based on the short talks and the posters, the workshop chair people selected five studies, which were awarded prizes to a total value of 750 € (1st – 250 €: Cristina Maria Chiarolla from Würzburg, 2nd – 200 €: Bernd Bufe's lab from Zweibrücken/Kaiserslautern, 3rd – 150 €: Hagen Bachmann's lab from Witten/Herdecke, 4th – 100 €: Sevinj Sultanli from Heidelberg, 5th – 50 €: Miriam Kelm from Kiel). The sponsor Origene donated a 250 € extra award for the best short talk to Victoria Fuhr (Würzburg) for her presentation 'ScRNA-Seq tracks the transcriptomic alterations of a sensitive mantle cell lymphoma cell line across ibrutinib treatment'. Moreover, the STS travel grant committee chose 5 students (Yue Gao, Sevinc Sultanli, Dayoung Yu, Heidelberg; Bahareh Jooyeh, Giessen; Anna Katharina Riebisch, Bochum) to support their meeting attendance by 250 €. The two Silver Sponsors of the meeting, Jackson ImmunoResearch and Agilent, each sponsored one grant for Yue Gao and Dayoung Yu, respectively.

Excellent research by an early career researcher of the STS is acknowledged by the STS Science Award. In 2021, the award was shared by Sushmita Chakraborty (All India Institute Of Medical Sciences (AIIMS), New Delhi, India) and Sjoerd van Wijk (Goethe University, Frankfurt). Sushmita Chakraborty presented her recent data on the importance of the T cell regulatory factor OX40 for treatment of Pulmonary Sarcoidosis and Sjoerd van Wijk his studies on autophagy-dependent cell death in glioblastoma cells. Application for the STS Science Award 2022 are highly welcome, please refer to https://sigtrans.de/awards#sts-science-award for further information.

One highlight of the STS Meeting is definitely the STS Honorary Medal award lecture. In 2020, the STS awarded its Honorary Medal to Prof. Dr. Peter H. Krammer (DKFZ, Heidelberg), but due to the SARS-CoV-2 pandemic no adequate medal ceremony was possible. Thus, STS council and advisory board decided to postpone the festive award ceremony to 2021. Peter Krammer received the STS Honorary Medal for his lifetime contributions to clarify numerous aspects of cell death signaling. Ingo Schmitz, a former PhD student in the Krammer lab and now Professor at the Ruhr University Bochum, opened the award ceremony with a personal laudation, followed by the festive presentation of the medal by the STS council. Afterwards, P. Krammer gave his 'Honorary Medal Lecture' in which he presented a highly informative temporal overview of his lifetime research, followed by a discussion of his influential work on apoptotic signaling and its future implications.

Strict implementation of the elaborate hygiene concept prepared by the organizers and the very cooperative and disciplined behavior of all participants made it possible to enjoy an interesting and stimulating meeting - thanks to all participants. We thank also our industrial sponsors (https://www.sigtrans.de/past-meeting.html#sponsor) and MDPI as well as our academic sponsors and our co-organizers for the support.

For a more detailed summary of the scientific talks of the STS meeting please refer to: Schirmer B, Giehl K, Kubatzky KF.'Report of the 24th Meeting on Signal Transduction 2021', Int J Mol Sci. 2022 Feb 11;23(4):2015. doi: 10.3390/ijms23042015
The 25th 'Silver Jubilee' STS Meeting is scheduled for November 2nd to November 4th 2022 and will again take place at the Leonardo Hotel in Weimar. The meeting organization has already started and regular updates on the schedule and contents of the meeting can be found at https://www.sigtrans.de. Additionally, news regarding the work of the STS can be accessed via the Facebook or through the Twitter accounts (@SignalSociety).
We hope to see you in Weimar in November 2022 and celebrate the 'Silver Jubilee' STS Meeting with us.

Best wishes,
Klaudia Giehl (on behalf of the STS council)

Prof. Dr. Klaudia Giehl (STS President)
Justus-Liebig-Universität Gießen
Signaltransduktion zellulärer Motilität
Medizinisches Forschungszentrum Seltersberg

The STS Science Award 2021 was given to Sushmita Chakraborty (right, All India Institute Of Medical Sciences, New Delhi, India) and Sjoerd van Wijk (left, Goethe University, Frankfurt).

25. Meeting on Signal Transduction

STS

organized by the

Signal Transduction Society (STS)

in association with

DGfI German Society for Immunology · dgp · DGZ · GBM · SFB1423

www.sigtrans.de/meeting

Organizational team: Klaudia Giehl (Gießen), Katharina Hieke-Kubatzky (Heidelberg), Ingo Schmitz (Bochum), Detlef Neumann (Hannover), and the STS Advisory Board

Signal Transduction: Receptors, Mediators, and Genes

Early Bird Registration / Abstract Submission Deadline: September 16, 2022

Topics & Speakers

Hot Topics in Signal Transduction
Kai Kretzschmar, Würzburg (DE)
Gunnar Schulte, Stockholm (SE)

Differentiation, Stress, and Death
Mathieu Bertrand, Ghent (BE)
Peter Vandenabeele, Ghent (BE)

GPCR-Mediated Signaling
hosted by the SFB 1423, Leipzig (DE)

Immune Cell Signaling
Guoliang Cui, Heidelberg (DE)
Jürgen Ruland, München (DE)

Infection and Inflammation
Andreas Diefenbach, Berlin (DE)
Birgit Sawitzky, Berlin (DE)

Tumor Cell Biology
Janine Erler, Copenhagen (DK)
Natacha Prevarskaya, Lille (FR)

November 2-4, Weimar | 2022

The pandemic situation permitting, the Meeting will be held on site with an appropriate hygiene & safety concept.

STS Honorary Medal
Luke O'Neill, Dublin (IE)

Scan for further information

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Protokoll der Mitgliederversammlung 2021 der Deutschen Gesellschaft für Zellbiologie e.V.

Versammlungsleiter und Protokollführer: Prof. Dr. Roland Wedlich Söldner, Präsident

Geschäftsführerin: Prof. Dr. Sandra Iden

Die Mitgliederversammlung fand am 9.12.2021, 12.30 Uhr, online über Zoom statt.

Alle Mitglieder waren rechtzeitig durch Ankündigung in unserem Online-Mitgliederjournal „Cell News" und mehrmals über E-Mail eingeladen und über die Tagesordnung informiert worden und konnten sich über den kommunizierten Link zuschalten.

Tagesordnung:

1. Bestätigung des Protokolls der letzten Sitzung
2. Jahresbericht des Präsidenten mit anschließender Diskussion
3. Geschäfts- und Kassenbericht über das abgelaufene Kalenderjahr
4. Bericht der Rechnungsprüfer
5. Entlastung des Vorstandes
6. Genehmigung des Budgets und Festsetzung des jährlichen Mitgliederbeitrages
7. Sonstiges

1. Bestätigung des Protokolls der letzten Sitzung

Das Protokoll der Mitgliederversammlung 2020 (Zoom, 15.12.2020) war in „Cell News", Ausgabe 1/2021 veröffentlicht worden und wird bestätigt.

2. Jahresbericht des Präsidenten

Roland Wedlich-Söldner berichtet über die Aktivitäten der DGZ in 2020 und 2021. Zu den Mitgliederzahlen informiert er, dass wir im Jahr 2020 8 neue Mitglieder gewinnen konnten und 50 Austritte verzeichnen mussten. Zum Zeitpunkt der Mitgliederversammlung hatten wir für das laufende Jahr 2021 22 Neuzugänge und 20 Austritte und die aktuelle Mitgliederzahl beträgt somit 741.

Das für September 2020 in Münster geplante International Meeting der DGZ wurde mit gleichlautender Thematik „The Cell Biology of Interfaces" auf den 27.-29.09.2021 verschoben und fand in einem reinen Online Format statt. Die zugesagte Förderung durch die DFG bestand weiter. Roland Wedlich-Söldner und das Organisationsteam haben mit der Firma Orgalution eine virtuelle 3D Umgebung des Münsteraner Schlosses für die Tagung aufgestellt. Die Tagung war mit 300 Teilnehmern ein großer Erfolg. Besonders zu erwähnen war die Beteiligung von 7 zellbiologischen Verbundprojekten am Programm der Tagung, was die Bedeutung der DGZ für eine weiterführende Vernetzung der Zellbiologie in Deutschland demonstriert.

Corona-bedingt waren die DGZ-Preise 2021 in einem Webinar am 18.11.2021 verliehen worden, Preisträger*innen waren Prof. Dr. Frank Bradke (Carl Zeiss Lecture), Dr. Matteo Allegretti (Walther Flemming Award), Dr. Katharina Scheibner (Nikon Young Scientist Award), Dr. Leo Kurian (BINDER Innovation Prize) und Dr. Isidora Paredes Ugarte (Werner Risau Prize).

Die Preisträgerinnen und Preisträger hielten online-Vorträge, die von den Mitgliedern in einer gemeinsamen Zoom-Konferenz verfolgt wurden. Die Vorträge sind auch über einen Link auf der Homepage der DGZ (https://zellbiologie.de/wissenschaftspreise/) abrufbar, worüber die Mitglieder informiert wurden.

Als Publikationsorgan der DGZ wurde in 2020 eine Ausgabe und in 2021 zwei Ausgaben der „Cell News" veröffentlicht.

Weiterhin stellt Roland Wedlich-Söldner die Planungen und den Stand zur Neugestaltung der DGZ-Website (in Bearbeitung) sowie die Einführung von zwölf DGZ-Arbeitsgruppen (Work Groups) vor. Jede Arbeitsgruppe wird durch zwei Sprecher*innen geleitet und soll jeweils ein zellbiologisches Thema bzw. für das Feld relevante Techniken repräsentieren. Als eine Maßnahme der Arbeitsgruppen wird in 2022 eine monatliche Online-Reihe „DGZ Focus Workshops" eingeführt, bei der jeweils eine Arbeitsgruppe bis zu vier Sprecher*innen verschiedener Karrierestufen zu Vorträgen einlädt. Der erste Focus Workshop wird im Januar 2022 per Zoom stattfinden.

3. Geschäfts- und Kassenbericht

Sandra Iden berichtet über die Finanzlage der DGZ im Geschäftsjahr 2020 und erläutert diese im Detail anhand der Einnahmen- und Ausgaben-Bilanzen. Mitgliedsbeiträge und Werbe-Einnahmen aus der „Cell News" stehen als größte Posten den Ausgaben für den Betrieb des Büros, Sponsoring von Preisen und Veranstaltungen gegenüber. Das tatsächliche Guthaben ist mit EUR 112.175,43 (EUR 81.523,25 DGZ, EUR 30.652,18 Werner-Risau-Preis) im Vergleich zum Vorjahr (EUR 101.882,57) leicht erhöht. Dies ist nicht durch deutlich gesteigerte Einnahmen, sondern eine erst in 2021 erfolgte Teilzahlung für Personalkosten des DGZ-Sekretariat für den Zeitraum 2020 zu erklären. Berücksichtigt man diese (verzögert ausgeführte) Zahlung von Personalkosten, ergibt sich ein nahezu konstantes Guthaben im Vergleich zum Vorjahr.

BILANZ 2020

EINNAHMEN / AUSGABEN

Einnahmen	EUR	**Ausgaben**	EUR
Mitgliedsbeiträge (abzgl. Retouren)	35.980,00	Bankkosten	782,88
Spenden, Preisgelder	13.500,00	Retoure Mitgliedsbeiträge	300,00
Zinsen	9,27	Reisekosten	800,29
Cell News, Homepage (Werbeanzeigen, Firmen-Links)	4.765,50	Spenden, Preisgelder	14.500,00
		Cell News	2.078,77
DGZ-Tagungen	1034,30	DGZ-Tagungen	0,00
Überträge	57.698,33	Bürokosten/Gehalt Sekr. (2020, 1. Teilzahlung[1]) Büromaterial, Homepage	19.457,59
Sonstige	1.843,75		
		Überträge	57.698,33
		Sonstige	8.920,43
Summe der Einnahmen:	101.882,15	Summe der Ausgaben:	104.538,29
Guthaben am 31.12.2019:	245.243,57	**Guthaben am 31.12.2020:**	**112.175,43**
Guthaben DGZ:	71.046,66	Guthaben DGZ:	81.523,25
Werner Risau Preis:	30.835,91	Werner Risau Preis:	30.652,18

[1] Die 2. Teilzahlung für 2020 Bürokosten/Gehalt Sekr. ans Deutsche Krebsforschungszentrum (DKFZ) erfolgt in 2021.
Die Einnahmen und Ausgaben wurden von den beiden Kassenprüfern Julia Groß und Ralph Gräf geprüft und für richtig befunden. und für richtig befunden.

4. Bericht der beiden Rechnungsprüfer

Die Einnahmen und Ausgaben im Geschäftsjahr 2020 waren durch die beiden Rechnungsprüfer Prof. Dr. Julia Groß und Prof. Dr. Ralph Gräf geprüft und für richtig befunden worden, es gab keine Beanstandungen. Corona-bedingt konnte die Prüfung nicht persönlich vor Ort durchgeführt werden, daher waren die Unterlagen per E-Mail an die Rechnungsprüfer geschickt worden.

5. Entlastung des Vorstandes

Der Vorstand wird über online-Abstimmung (in zoom) einstimmig – mit Enthaltungen der Vorstandsmitglieder – entlastet.

6. Genehmigung des Budgets und Festsetzung des jährlichen Mitgliederbeitrages

Das Budget wurde einstimmig genehmigt. Die jährlichen Mitgliedsbeiträge (seit 2014: 60 EUR Vollmitglied, 40 EUR Doppelmitgliedschaft, 20 EUR Studierende) sollen für 2022 stabil gehalten werden, jedoch eine eventuelle Erhöhung zu 2023 in der nächsten Mitgliederversammlung diskutiert werden. Die Beibehaltung der Mitgliedsbeiträge in 2022 wurde einstimmig entschieden.

7. Sonstiges / Offene Diskussion

Der Nutzen und die genauere Ausgestaltung der neuen DGZ Workgroups wurden diskutiert. Die Bedeutung von professionell gestalteten Logos für die Sichtbarkeit der Workgroups wurde dabei unterstrichen. Der Präsident berichtet dazu von einer Zusammenarbeit mit 2 Designern in Singapur, die sich bereit erklärt haben, 12 Logos für die Workgroups zu entwerfen.

Es wurde vorgeschlagen eine Review-Serie durch die DGZ im European Journal of Cell Biology zu veröffentlichen. Solch eine Initiative wurde prinzipiell unterstützt. Es gab allerdings auch die breite Rückmeldung, dass solche ein Projekt nicht mit Journalen gemacht werden sollen, die eine „Paywall" enthalten, vor allem im Elsevier Verlag. Die DGZ sollte nur mit Non-Profit-Herausgebern arbeiten.

Prof. Dr. Roland Wedlich-Söldner
Präsident

Prof. Dr. Sandra Iden
Geschäftsführerin

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