Reiner Bleher, Ph.D. Research Associate Professor, Department of Materials Science & Engineering;
Manager, NU*ANCE* Center - BioCryo Core;
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Education

1993 to 1998

- Graduation Dr. biol. hum. (=Ph.D.), grade "magna cum laude" (=A). Supervisor Prof. Dr. Rainer Martin
- Ph.D. Thesis Research, Central Facility of Electron Microscopy, Ulm University, Germany. "Immunocytochemical localization of phosphorylated and unphosphorylated histone-H1 in different cell-cycle phases of HeLa-cells".

1993 to 1995

- Member of the "Graduierten-Kolleg Biomolekulare Medizin" at Ulm, a government funded stipend program for select Ph.D. students, sustained by courses in methods of molecular biology, lectures, and seminars.

1986-1992

- Diploma thesis at the Dept. of Biology III, Ulm University, Germany
  "Effect of different diet types on the reproduction behavior of Thermocyclops crassus and Cyclops vicinus (Crustacea, Copepoda)". Supervisor Prof. Dr. Gerhard Maier. Tutorships in biology.
- Studies and diploma in Biology, graduation Diploma Biologist (=M.Sc.), grade 1 (=A).

Professional Experience

2022 to present

Research Associate Professor, Department of Materials Science & Engineering, and Manager of the BioCryo Facility of NUANCE, Northwestern University, IL.

2017 to 2022

Research Assistant Professor, Department of Materials Science & Engineering, and *Manager* of the BioCryo Facility of NU*ANCE*, Northwestern University, IL.

- 2022 integrating a 300kV JEOL 3200FS TEM and a 120kV JEOL 1400 TEM to the BioCryo Facility.
- In 2017, the BioCryo facility expanded by adding the electron microscopy section of BIF (Biological Imaging Facility). Since Sept. 2017, the BioCryo Facility is the fourth separate unit of NUANCE, in addition to EPIC, Keck II and SPID.
- Managing the BioCryo Facility.
- Supervising two Electron Microscopy Specialists.
- Permanent involvement in research collaborations with several PIs.

2010 to 2021

Research Assistant Professor, Department of Materials Science & Engineering, and Manager of BioCryo related electron microscopes and equipment in NU*ANCE*, Northwestern University, IL.

- Since September 2017 Manager of the BioCryo Facility as a separate unit of NU*ANCE*
- Setting up and managing the BioCryo Facility of EPIC, comprising cryo SEM, cryo S/TEM and the respective cryogenic sample preparation instruments. Supervising one Research Technologist.

- Main Equipment for cryoSEM was received in Dec. 2013/Jan. 2014. Start of high-pressure freezing and cryoSEM capabilities in EPIC.
- Research on the distribution of transition metals in biological systems.
- Research activities included investigating the role of zinc in the maturation of oocytes to eggs, in fertilization, and in early embryo development, (Keck/CBC funded project).
- Successfully developed single cell preparation methods for analysis with S/TEM and EDS, and was able to detect zinc deposits in defined compartments of mouse eggs (published in Nature Chemistry, 2015).
- Research objectives include the development and application of sample preparation methods that eliminate or minimize effects on the elemental composition and distribution in specimens.
- Permanent involvement in research collaborations with several PIs.

2003 to 2006

Research Associate, Immunology and Cell Biology Lab (Prof. Dr. Albrecht Group), Dept. of Animal Science, University of Wisconsin-Madison, WI.

- My focus was development of a multiple labeling system using metal colloids and EFTEM for immuno-EM and correlative microscopy. Results were presented in talks as invited speaker at the international Microscopy and Microanalysis meetings 2004 and 2005 and published in peerreviewed journals.
- Collaborated in the development of a mathematical model for the determination of the factors essential for achieving maximal labeling density in a most efficient way.

2000 to 2003

Postdoc, Central Facility of Electron Microscopy, Ulm University, Germany and at the Instituto de Ciencias Biomedicas de Abel Salazar, Porto University, Portugal.

- Research in the field of biomineralization, and on protein synthesis in squid giant axons with TEM and EFTEM, and HRSEM. Results were presented as posters at international meetings and published in peer-reviewed journals.

1998 to 2000

Postdoctoral Associate, Department of Applied Physiology, Ulm University, Germany.

- Fixed term appointment, Investigated and tested an antibody directed against a Ca-channel protein with immuno-EM and immunofluorescence on human skeletal muscle and mouse retina, liver and kidney tissue.

Related Experience

2006 to 2010

Scientist, International Center of Biotechnology of Minitube of America, Inc.

- Developed methods and techniques for identifying and labeling gender-specific DNA sequences on biopsies and in embryos and sperm cells with PNA-, LNA-, and TFO probe molecules, which resulted in the development of a kit for rapid gender determination of bovine embryo biopsies (patented).
- Contributed to the development of novel software of a fluorescence microscopy-based sperm chromatin structure assay (SCSA) for the rapid assessment of the percentage of sperm cells with DNA fragmentation in a given sample.

Skills

SEM, TEM, STEM Cryo SEM/TEM/STEM, EDS, EFTEM, conventional- and cryogenic sample preparation, immuno-EM, correlative microscopy (CLEM), Confocal Microscopy, Immunofluorescence, *in situ* hybridization, cell culture, gel lectrophoresis (DNA/Protein), PCR, Western Blotting.

Research Involvement

Contributing to and/or assisting in several research projects:

- **PI Jacobsen, Chris** ○ Development of an ice crystal free cryofixation method of bulk native biological samples (whole mouse brains) for x-ray tomography with pressurized helium.
- **PI Mirksich, Milan /Dravid Vinayak** ○ Contributing to MURI for TEM characterization of Megamolecules.
- **PI Backman, Vadim**
    - Correlative Partial Wave Spectroscopy and Scanning Transmission Electron Microscopy.
- **PI Dravid, Vinayak** ○ Cytoskeletal dynamics of endothelial cells in light microscopy, atomic force microscopy and electron microscopy (SEM and STEM).
    - Manish Jaiswal. Development of thermoresponsive magnetic hydrogels as theranostics.
- **PI Joester, Derk** ○ EM Characterization of spicules in sea urchin embryos. ○ Iron biomineralization in Chiton teeth.
    - Acantharia biomineralization.
- **PI Dichtel**, **William** ○ Covalent Organic Frameworks: Designed Porous Polymers.
- **PI Gianneschi, Nathan** ○ Biomaterials: Therapeutic delivery.
- **PI Espinosa, Horacio** ○ Mechanical behavior of natural and synthetic nanomaterials.
- **PI O'Halloran, Thomas** ○ Investigation on zinc fluxes during development of fertilized and unfertilized Xenopus eggs and on mouse MII eggs with STEM-EDS and XRF.
    - Distribution of transition metals in uncapacitated and capacitated sperm cells.
    - Localization and distribution of copper in different strains of E. coli.
- **PI Woodruff, Teresa** ○ Successfully optimized the sample preparation procedure of mouse MII eggs to protect and retain specimens during processing.
- **PI Ji, Peng** ○ Nuclear and chromatin structure during erythropoiesis.
- **PI Marko, John**
    - Nucleoid structure of E. coli cells. Poster at Microscopy & Microanalysis.
- **PI Mirkin, Chad** ○ Kaylie Young: Assembly of anisotropic nanoparticles into superlattices.
    - Bong Jin Hong. Directed assembly of nucleic acid-based polymeric nanoparticles. ○ Bong Jin Hong. Enhancing DNA-Mediated Assemblies of Supramolecular Cage Dimers.

Projects with External Researchers:

- **AbbVie:** TEM characterization of alpha-synuclein and of Tau protein fibril samples.
- **UIC, James Franck Institute, PI Tiang, Bozhi,** CryoSEM of Hydrogels.
- **University of Mississippi, Dept. of Chemistry, PI Watkins, Davita,** TEM of Polymerosomes.
- **Washington University St Louis, Dept. of Internal Medicine, PI Jianghui Hou,** Ultrasructural study of tight junctions in Kidney.
- **PI Diekwisch, Thomas, Texas A&M University College of Dentistry**
  Development and function of the outer enamel epithelium.
- **BP,** Project with Young Chung Wang: Study of the Ultrastructure of experimental Catalysts.

- **FDA**, Project with Timothy Duncan/Rebecca Weiner: Characterization of Quantum Dots in Polymers used as Packaging Materials.
- **OilDri,** SEM-EDS service work for detection of a food additive in the hepatopancreas of shrimp.

BioCryo Facility related activities

2021/2022: Installation and integration of a 300kV JEOL 3200FS TEM (complete) and of a 120kV JEOL 1400 TEM (ready by September 2022).

2022/since 2013

-User training on: TEM 1230, STEM HD2300, S-4800 cryo-SEM, HPM100 high-pressure freezer, ACE 600 freeze fracturing/cryo-coating, Vitrobot plunge freezer, VT1200S Vibrating blade microtome, Tousimis Samdri 795 critical point dryer, Cressington sputter coater.

-Providing sample preparation, ultramicrotomy and STEM-EDS as service for users (cryogenic and conventionally).

2020/2021: Member of Northwestern's Core Facility Task Force (OR)

2019 Mentored a REU student in a project to optimize parameters for large-scale backscatter electron scanning electron microscopy (BSE-SEM) of biological samples.

2019 Organized a workshop introducing the ASP1000 Automated Sample Processor for EM samples (March 27, 2019).

2018: Organized and executed a Cryo-CLEM workshop on November 27.

2018: Adding automated sample processing for resin embedding, immunolabeling, and grid staining to the service lines of the facility.

2018: Adding large scale "histoscale" imaging of resin sections with SEM to the BioCryo capabilities

2022/2021/2019/2018/2017/2016/2015: Conducting tours and demos for visitors of NUANCE and/or the BioCryo Facility

2017: Successfully integrated sectioning with a vibrating blade microtome ("Vibratome") into BioCryo workflows.

2017: Planning lab and workflow layout, followed by successful execution of integrating BIF EM lab space, instrumentation, and into N*UANCE's* BioCryo Facility.

2016: Cryo-SEM workshop with over 60 attendees.

2015: Attended the course "Leadership and Management in Core Facilities" from Nov. 16 – Nov. 20 2015 at the Kellogg School of Management.

Educational activities

Ongoing: Train users in TEM/STEM, cryo-SEM and ancillary equipment.

2022: Mentored a summer intern as part of the CSU/Core Facilities Internship Program.

2019 Mentored a REU summer student for development of histoscale SEM imaging.

2018 Mentored a REU summer student in a cryo-SEM project.

2018/2017/2016 PhD student Yue Li (PI Dravid/Backman): Teaching in electron microscopy and sample preparation of biological samples and advising in manuscript preparation.

2018/2017/2016: Advising several students with uncommon samples in methods and techniques to reach their goals.

2017/2016 Postdoc Xin Wang (PI Dravid/Shekjawat): Teaching mammalian cell culture, fluorescence microscopy, electron microscopy and sample preparation of biological samples and advising in manuscript preparation.
2017-2016: contributing with cryo-TEM, sample prep and STEM to course MSE 190
2017: Contributed with sample prep, imaging and consultation to a NU team in an iGEM competition project (Internationally Genetically Engineered Machine). The team was awarded the Silver medal. **2017: BTP (Bio Technology Program) Imaging Practicum.** I was a member of the Discussion Panel and gave a lab tour with a STEM imaging demo.

Proposals

- **2021 OR Spring Core Facilities Equipment Funding:**
  Dual EDS System replacement for HD2300 STEM — funded
- **2020 OR Fall Core Facilities Equipment Funding:**
  Replacement of DUAL_EDS system on HD2300 STEM — not funded
- **2020 CBC_COVID-19 Response** — not funded
- **2020 NUCATS_Rapid COVID-19 analysis** — not funded
- **2019 OR Spring Core Facilities Equipment Funding:**
  Ultrasonic oscillating diamond knife — funded
- **2018 NIH, S10**
  Leica EM ICE high-pressure freezer — not funded
- **2018 OR Spring Core Facilities Equipment Funding:**
  Ultrasonic oscillating diamond knives — not funded
- **2018 OR Spring Core Facilities Equipment Funding:**
  Automated Sample Processor ASP1000 — funded
- **2017 OR Fall Core Facilities Equipment Funding:**
  Fluorescence upgrade for an existing light Microscope — not funded
- **2017 OR Spring Core Facilities Equipment Funding:**
  VT1200 S vibrating blade Microtome — funded
- **2016 OR Fall Core Facilities Equipment Funding:**
  Hitachi SPARKLE cleaning system — not funded
- **2016 OR Spring Core Facilities Equipment Funding:**
  Automated Critical Point Dryer — not funded

- **2015 PSOC Pilot Project:**
  Correlative Live-cell PWS (Partial Wave Spectroscopy) and ET (electron tomography) for the study of chromatin organization and its alterations during early carcinogenesis. not funded
- **2015 OR Fall Core Facilities Equipment Funding:**

  Cryo transfer sample holder for electron microscopy funded
- **2015 OR Spring Core Facilities Equipment Funding:**

  Cryo transfer sample holder for electron microscopy: not funded
- **2013 OR Spring Core Facilities Equipment Funding:**

  High-tilt analytical cryo sample holder for electron microscopy not funded
- **2012 OR Spring Core Facilities Equipment Funding:**

  Leica EM KMR3 Knifemaker funded

Memberships

- MSA, Microscopy Society of America
- MSA, Focused Interest Group: Cryo Preparation
- M3S, Midwest Microscopy and Microanalysis Society
- Since May 2020 serving as a member of the Core Facilities Task Force that developed return to work strategies for the cores as they returned toward normalized operations with COVID-19 restrictions.
- Since December 2019 serving as a member of the Institutional Biosafety Committee (IBC) of NU.
- Member of the Review Panel for Core Facilities Development Pilot Grant Proposals (since 2018)

Publications

- Lin, Yiliang, Xiang Gao, Jiping Yue, Yin Fang, Jiuyun Shi, Lingyuan Meng, Clementene Clayton et al. "A soil-inspired dynamically responsive chemical system for microbial modulation." Nature chemistry 15, no. 1 (2023): 119-128.
- Wang, X., Agrawal, V., Dunton, C. L., Liu, Y., Virk, R. K., Patel, P. A., ... & Ameer, G. A. (2023). Chromatin reprogramming and bone regeneration in vitro and in vivo via the microtopography-induced constriction of cell nuclei. Nature Biomedical Engineering, 1-16.
- Yang, Tianxi, Laxmi Adhikari, Teena Paulose, Reiner Bleher, and Timothy V. Duncan. "Titanium dioxide and table sugar enhance the leaching of silver out of nanosilver packaging." Environmental Science: Nano 10, no. 6 (2023): 1689-1703.
- Li, Y., Agrawal, V., Virk, R.K., Roth, E., Li, W.S., Eshein, A., Frederick, J., Huang, K., Almassalha, L., Bleher, R. and Carignano, M.A., 2022. Analysis of three-dimensional chromatin packing domains by chromatin scanning transmission electron microscopy (ChromSTEM). *Scientific reports*, (2022): 1-15.

- Seeler, John F., Ajay Sharma, Nestor J. Zaluzec, Reiner Bleher, Barry Lai, Emma G. Schultz, Brian M. Hoffman, Carole LaBonne, Teresa K. Woodruff, and Thomas V. O'Halloran. "Metal ion fluxes controlling amphibian fertilization." *Nature Chemistry* (2021): 1-9.
- Zhou, Shengwang, Peng He, Sonali Dhindwal, Valerie L. Grum-Tokars, Ying Li, Kelly Parker, Justin A. Modica, Reiner Bleher et al. "Synthesis, Characterization, and Simulation of Four-Armed Megamolecules." *Biomacromolecules* (2021).
- Li, Yue, Adam Eshein, Ranya KA Virk, Aya Eid, Wenli Wu, Jane Frederick, David VanDerway et al. "Nanoscale chromatin imaging and analysis platform bridges 4D chromatin organization with molecular function." Science Advances 7, no. 1 (2021): eabe4310.
- Fang, Yin, Endao Han, Xin-Xing Zhang, Yuanwen Jiang, Yiliang Lin, Jiuyun Shi, Jiangbo Wu et al. "Dynamic and programmable cellular-scale granules enable tissue-like materials." Matter 2, no. 4 (2020): 948-964.
- Liu, W., Mirzoeva, S., Yuan, Y., Deng, J., Chen, S., Lai, B., Vogt, S., Shah, K., Shroff, R., Bleher, R. and Q Jin. "Development of Fe 3 O 4 core–TiO 2 shell nanocomposites and nanoconjugates as a foundation for neuroblastoma radiosensitization." *Cancer Nanotechnology* 12, no. 1 (2021): 1-25.
- Jokisaari, Jacob R., Canhui Wang, Qiao Qiao, Xuan Hu, David A. Reed, Reiner Bleher, Xianghong Luan, Robert F. Klie, and Thomas GH Diekwisch. "Particle Attachment-Mediated and Matrix/Lattice-Guided Enamel Apatite Crystal Growth." ACS nano (2019).
- Moreno, Bradley, Allessandra DiCorato, Alexander Park, Kellen Mobilia, Regina Knapp, Reiner Bleher, Charlene Wilke, Keith Alvares, and Derk Joester. "Culture of and experiments with sea urchin embryo primary mesenchyme cells." Methods in cell biology 150 (2019): 293-330.
- Alzate-Sánchez, Diego M., Yuhan Ling, Chenjun Li, Benjamin P. Frank, Reiner Bleher, D. Howard Fairbrother, Damian E. Helbling, and William R. Dichtel. "β-Cyclodextrin Polymers on Microcrystalline Cellulose as a Granular Media for Organic Micropollutant Removal from Water." ACS applied materials & interfaces (2018).
- Li, Y., Eshien, A., Backman, V., Bleher, R., & Draivid, V. P. (2018). Quantifying Chromatin Fractal Dimension through ChromEM Staining. Microscopy and Microanalysis, 24(S1), 1282-1283.
- Wang, X., Bleher, R., Wang, L., Garcia, J. G. N., Dudek, S. M., Shekhawat, G. S., & Dravid, V. P. (2017). Imatinib Alters Agonists-mediated Cytoskeletal Biomechanics in Lung Endothelium. Scientific Reports, 7(1), 14152.
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- Li, Y., Zhang, D., Capoglu, I., Hujsak, K. A., Damania, D., Cherkezyan, L., Roth, E., Bleher, R., Wu, J.S., Subramanian, H., & Dravid, V. P. (2017). Measuring the Autocorrelation Function of Nanoscale ThreeDimensional Density Distribution in Individual Cells Using Scanning Transmission Electron Microscopy, Atomic Force Microscopy, and a New Deconvolution Algorithm. *Microscopy and Microanalysis*, *23*(3), 661-667.
- Li, Y., Almassalha, L. M., Chandler, J. E., Zhou, X., Stypula-Cyrus, Y. E., Hujsak, K. A., Roth, E. W., Bleher, R., Subramanian, H., & Dravid, V. P. (2017). The effects of chemical fixation on the cellular nanostructure. *Experimental cell research*, *358*(2), 253-259.
- Li, Y., Almassalha, L., Chandler, J., Cyrus, Y., Bleher, R., Subramanian, H., Szleifer,I., Backman,V. & Dravid, V. (2016). The Effects of Chemical Fixation on the Cellular Nanostructure: A Correlative Study of Back-Scattered Interference Spectrometry Microscopy and TEM. *Microscopy and Microanalysis*, *22*(S3), 234-235.

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- Zhao, B., Mei, Y., Schipma, M. J., Roth, E. W., Bleher, R., Rappoport, J. Z., ... & Ji, P. (2016). Nuclear condensation during mouse erythropoiesis requires caspase-3-mediated nuclear opening. *Developmental cell*, *36*(5), 498-510.
- Hong BJ, Cho VY, Bleher R, Schatz GC, Nguyen ST. (2015) Enhancing DNA-Mediated Assemblies of Supramolecular Cage Dimers through Tuning Core Flexibility and DNA Length-A Combined Experimental-Modeling Study. J Am Chem Soc. 2015 Oct 21;137(41):13381-8. doi: 10.1021/jacs.5b08678. Epub 2015 Oct 12. PubMed PMID: 26398097.
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- Hong BJ, Eryazici I, Bleher R, Thaner RV, Mirkin CA, Nguyen ST. Directed Assembly of Nucleic AcidBased Polymeric Nanoparticles from Molecular Tetravalent Cores. (2015) J Am Chem Soc. 2015 Jul 1;137(25):8184-91. doi: 10.1021/jacs.5b03485. Epub 2015 Jun 19. PubMed PMID: 25980315.
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- Hong YP, Gleber SC, O'Halloran TV, Que EL, **Bleher R**, Vogt S, Woodruff TK, Jacobsen C. (2013) Alignment of low-dose X-ray fluorescence tomography images using differential phase contrast. J Synchrotron Radiat. 2014 Jan;21(Pt 1):229-34. doi: 10.1107/S1600577513029512. Epub 2013 Dec 12. PubMed PMID: 24365941; PubMed Central PMCID: PMC3874022.
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Patent

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Recent Posters/Conference Presentations

- Li, Wing Shun, Eric Roth, Reiner Bleher, Vadim Backman, and Vinayak P. Dravid. "Annular Dark Field Imaging with Variable Angle for Improving STEM Tomography of Biological Samples." (2023): 945-947.

- Li, Yue, Adam Eshein, Ranya Virk, Aya Eid, David VanDerway, Jane Frederick, Reiner Bleher, Igal Szleifer, Vinayak Dravid, and Vadim Backman. "Nanoscale Chromatin Imaging and Analysis (nanoChIA) platform bridges 4-D chromatin organization with molecular function." Microscopy and Microanalysis 26, no. S2 (2020): 1046-1050.
- Parker, Kelly, Shengwang Zhou, Blaise Kimmel, Sonali Dhindwal, Reiner Bleher, Cheri Hampton, Lawrence Drummy, Milan Mrksich, and Vinayak Dravid. "Soft Microscopy: Strategies for Contrast Enhancement of Macromolecules." Microscopy and Microanalysis 26, no. S2 (2020): 1026-1028.
- Li, Yue, Adam Eshein, Eric Roth, Reiner Bleher, and Vadim Backman. "Quantifying Three-Dimensional Chromatin Packing through Electron Tomography." Biophysical Journal 118, no. 3 (2020): 334a.
- Qiang, W., Z. Zhong, L. Gerratana, Y. Zhang, Q. Zhang, D. Gursel, J. J. Wei, R Bleher et al. "Abstract P6-03-01: Development of patient-derived xenograft tumor model with organ-specific metastatic potential for evaluation of new therapeutics for hormone receptor-positive advanced breast cancer." (2019): P6-03.
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- Li, Yue, Lusik Cherkezyan, Di Zhang, Luay Almassalha, Eric Roth, John Chandler, Reiner Bleher, Hariharan Subramanian, Vinayak P. Dravid, and Vadim Backman. "Nanoscale chromatin structure characterization for optical applications: a transmission electron microscopy study (Conference Presentation)." In Biophysics, Biology and Biophotonics II: the Crossroads, vol. 10075, p. 1007509. International Society for Optics and Photonics, 2017.
- Sung, L. P., Pillai, K. V., Gray, P., Bleher, R., & Duncan, T. V. (2016). Particle size-dependent environmental release of semiconductor nanocrystals from free-standing polymer nanocomposite films (No. Environmental Science Nano).
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- EL Que, FE Duncan, R Bleher, SC Gleber, S Vogt, VP Dravid, Teresa K Woodruff, Thomas V O'Halloran. (2014). Mapping zinc in the mammalian egg: Quantitative characterization of cortical compartments that mediate zinc flux. ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY 248.
- E Que, R Bleher, TK Woodruff, TV O'Halloran, TV O'Halloran, FE Duncan, TK Woodruff. (2014). Zinc Dynamics in the Mammalian Oocyte. JOURNAL OF BIOLOGICAL INORGANIC CHEMISTRY 19, S399S399
- R Bleher, Y Guo, EW Roth, NH Yazdi, RC Johnson, C Guet, J Marko, VP Dravid. (2013.) Nucleoid Atructure of Escherichia coli as Revealed by Scanning Transmission Electron Microscopy (STEM) and by 3D-Reconstruction of Z-Contrast Images of Serial Sections; 2013 international annual Microscopy and Microanalysis meeting in Indianapolis, IN.
- Y Guo, R Bleher, S Li, VP Dravid. (2013). Contrast Enhancement with Oolong Tea in Staining of Ultrathin Sections; Northwestern University. 2013 international annual Microscopy and Microanalysis meeting in Indianapolis, IN.

Talks

- Tech Talk 2023, "A brief introduction of two new TEMs at the BioCryo Core". July 20, NUANCE Center.

- Tech Talk 2022, “Cryo-SEM at the BioCryo Facility: workflow, instrumentation, and examples”. July 21, NU*ANCE* Center.
- Tech Talk 2021, “Cryogenic sample prep for electron microscopy: considerations and techniques”, June 24, NU*ANCE* Center
- Tech Talk 2019, “Successful electron microscopy of biological samples”, July 17, NU*ANCE* Center
- **Invited Talk** at the annual meeting of the Midwest Microscopy and Microanalysis Society on “CryoElectron Microscopy of Biological and Soft Matter Samples” on 11/18/2016.
- **Invited Talk** at the inaugural Capstone Seminar at NEIU on 10-29-2015. “EM of biological samples”.
- Presentation in the Biotechnology Training Program 08-24-2012, Northwestern University: “Electron Microscopy of Biological Samples”.
- Presentation at Argonne National Lab, 01-17-2012: “Electron microscopy and microanalysis of biological samples”.
- Presentation in Advances in Molecular Endocrinology & Cancer Research (AME), 11-09-2010 at Northwestern University: “Electron microscopy in biology”.
- Bleher R and Albrecht RM (2007). „Immuno EM using colloidal metal nanoparticles and electron spectroscopic imaging for co-localization at high spatial resolution”. Annual Meeting of the Midwest Microscopy and Microanalysis society. **Invited speaker.**
- Bleher R, Meyer DA, and Albrecht RM (2005). „High resolution multiple labeling for immuno-EM applying metal colloids and energy filtering transmission electron microscopy (EFTEM)”. Microsc. Microanal. 11 (Suppl. 2, Proceedings of Microscopy and Microanalysis). **Invited speaker**.
- Bleher R, Meyer DA, and Albrecht RM (2004). „Multiple labeling for EM using colloidal particles of gold, palladium and platinum as markers”. Microsc. Microanal. 10 (Suppl. 2, Proceedings of Microscopy and Microanalysis). **Invited speaker**.
- Bleher R and Martin R (1994). “Structural aspects of the processes leading to postmitotic nucleocytoplasmic compartmentation”. Cell Biol. Int., 18(5), 411. Submitted poster was selected for oral presentation.