Khanh Huy Bui

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WORK EXPERIENCE

2015–now **Assistant Professor**, Department of Anatomy and Cell Biology, McGill University, Montreal, Canada

2011–2014 **Postdoc**, European Molecular Biology Laboratory, Heidelberg, Germany
Structural organization of the human nuclear pore complex and the localization of its subunits supervised by Dr. Martin Beck

2010–2011 **Postdoc**, Paul Scherer Institute, Villigen PSI, Switzerland
3D structures of ATP-driven motor proteins from Chlamydomonas flagella by eletron cryo-tomography and 3D image analysis supervised by Dr. Takashi Ishikawa (continuing PhD project)

HONOUR AND AWARDS

2017 CIFAR Global Scholar ($100,000)
2015 Canada Research Chair Tier 2 in Cryo-Electron Tomography Award ($100,000 per year during 2015 - 2019)
2012 Marie Curie Intra-Europe Postdoctoral Fellowship Award (€172,000)
2011 EMBO Long-term Fellowship Award (€36,000)
2011 Swiss National Foundation Perspective Postdoctoral Fellowship Award (CHF63,000)
2011 Humboldt Fellowship for Postdoctoral Researcher Award (renounced)
2003 Outstanding achievement award in 3rd year by Food Technology Association of New South Wales
2001 Australian Development Scholarship for Bachelor study at UNSW, Australia

EDUCATION

2006–2010 **PhD**, Swiss Federal Institute of Technology Zürich, Switzerland
3D structures of ATP-driven motor proteins from Chlamydomonas flagella by eletron cryo-tomography and 3D image analysis supervised by Dr. Takashi Ishikawa

2005–2006 **MS**, Chalmers University of Technology, Sweden
Automatic enumeration of dividing mice eye cells in microscope images supervised by Prof. Mats Rudemo

2001–2004 **BS**, University of New South Wales, Australia
Probiotics and the synthesis of folic acid under simulated gastrointestinal conditions supervised by Assoc. Prof. Jayashree Arcot

GRANT

2018-2023 **CIHR Project Grant** ($849,000)
2017-2018 **CIFAR Global Scholar** ($100,000)
2015 **CFI** John R. Evans Leaders Fund for lab start-up ($250,000)
2015-2019 **Canada Research Chair Tier 2** ($500,000)
2015-2017 **McGill** Startup Fund ($190,000)
2016-2010 **NSERC** Discovery Grant ($190,000)

PUBLICATIONS

➲ **Peer-reviewed**

2018 Athanasiadou, D., Jiang, W., Goldbaum, D., Saleem, A., Basu, K., Pacella, M.S., Böhm, C.F., Chromik, R.R, Hincke, M.T., Rodríguez-Navarro, A.B., Vali, H., Wolf, S.E., Gray, J.J., **Bui,**

K.H. and McKee, M.D. Nanostructure, osteopontin, and mechanical properties of calcitic avian eggshell. *Science Advances* 4, no. 3, eaar321

2017 Kastritis, P.L., O'Reilly, F.J., Bock, T., Li, Y., Rogon, M.Z., Buczak, K., Romanow, N., Betts, M.J., **Bui, K.H.**, Hagen, W.J., Hennrich, M.L., Mackmull, M., Rappsilber, J., Russel, R.B., Bork, P., Beck, M., Gavin, A. Capturing protein communities by structural proteomics in a thermophilic eukaryote. *Mol Syst Biol*. 13: 15035.

2017 Ichikawa, M., Liu, D., Kastritis, P.L., Basu, K., Hsu, T.C., Yang, S. **Bui, K.H.** Subnanometer-resolution structure of the doublet microtubule reveals new classes of microtubule-associated proteins . *Nature Comms*. 8: 15035.

2017 Tarry, J.M., Haque, S.A., **Bui, K.H.**, Schmeing, T.M. X-ray crystallography and electron microscopy of cross- and multi-module nonribosomal peptide synthetase proteins reveal a flexible architecture, *Structure.* 25: 783-793.

2016 Otsuka S., **Bui, K.H.**, Schorb, M., Hossain, M.J., Politi, A.Z., Koch, B., Eltsov, M., Beck, M., Ellenberg, J. Nuclear pore assembly proceeds by an inside-out extrusion of the nuclear envelope. *eLife*. 5: e19071.

2016 Hampoelz, B., Mackmull, M., Machado, P., **Bui, K.H.**, Schieber, N., Santarella-Mellwig, R., Necakov, A., Philippe, J.M., Briggs, J.A.G., Lecuit, T., Schwab. Y., Beck, M. Pre-Assembled Nuclear Pores Insert from the ER into the Nuclear Envelope During Early Development. *Cell*. 166: 664-678

2016 Kosinski, J., Mosalaganti, S., von Appen, A., Teimer, R., DiGuilio, A.L., Wan, W., **Bui, K.H.**, Hagen, W., Briggs, J.A.G., Glavy, J.S., Hurt, E., Beck, M. Molecular architecture of the inner ring scaffold of the human nuclear pore complex. *Science*. 352: 363-365. (*Selected for Cover Art*)

2015 von Appen, A., Kosinski, J., Sparks, L., Ori, A., DiGuilio, A.L., Vollmer, B., Mackmull, M., Banterle, N., Parca, L., Buczak, K., Mosalaganti, S., Hagen, W., Andres-Pons, A., Lemke, E.A., Bork, P., Antonin, W., Glavy, J.S., **Bui, K.H.****, Beck, M.******. In situ structural analysis of the human nuclear pore complex. *Nature*. 526: 140-143. **(** <u>Shared corresponding authors</u>)**.

2015 Maheshwari, A., Obbineni, J.M., **Bui, K.H.**, Shibata, K., Toyoshima, Y., Ishikawa, T. α- and β-tubulin lattice arrangement of the axonemal microtubule doublet and binding proteins revealed by single particle cryo-electron microscopy and tomography. *Structure.* 23: 1584-1595

2015 Gaik, M., Flemming, D., von Appen, A., Kastritis, P., Muecke, N., Fischer, J., Stelter, P., Ori, A., **Bui, K.H.**, Bassler, J., Barbar, E., Beck, M., Hurt, E. Structural basis for assembly and function of the Nup82 complex in the nuclear pore scaffold. *J. Cell Biol.*, 208: 283-97.

2014 Ostenfeld, M.S, Jeppesen, D.K., Laurberg, J.R., Boysen, A.T., Bramsen, J.B., Primdal-Bengtson, B., Hendrix, A., Lamy, P., Dagnaes-Hansen, F., Rasmussen, M.H., **Bui, K.H.**, Fristrup, N., Christensen, E.I., Nordentoft, I., Morth, J.P., Jensen, J.B., Pedersen, J.S., Beck, M., Theodorescu, D., Borre, M., Howard, K.A., Dyrskjøt, L., Ørntoft, T. Cellular removal of miRb by RAB7A/B-dependent exosome release is linked to acquisition of a metastatic property in bladder cancer. *Cancer Research.* 74: 5758-5771

2014 Ueno, H., **Bui, K.H**., Ishikawa, T., Imai, Y., Yamaguchi, T., Ishikawa, T. Structure of dimeric axonemal dynein in cilia suggests an alternative mechanism of force generation. *Cytoskeleton*. 71:412-422 (*Selected for Cover Art*)

2013 **Bui, K.H.***, von Appen, A.*, DiGuilio, A.L., Ori, A., Sparks, L., Mackmull, M., Bock, T., Hagen, W., Andres-Pons, A., Glavy, J.S., Beck, M. Integrated structural analysis of the human nuclear pore complex scaffold. *Cell*. 155:1233-43. **(* <u>Shared first author;</u>** *Selected for Cover Art*)

2013 Banterle, N.*, **Bui, K.H.***, Lemke, E., Beck, M. Fourier ring correlation as a resolution criterion for super resolution microscopy. *J Struct Biol.* 183: 363-7 **(* <u>Shared first author</u>**)

2013 Ori, A., Banterle, N., Iskar, M., Andres-Pons, A., Escher, C., **Bui, K.H.**, Sparks, L., Solis-Mezarino, V., Rinner, O., Bork, P., Lemke, E.A., Beck, M. Cell type-specific nuclear pores: a case in point for context-dependent stoichiometry of molecular machines**.** *Mol Syst Biol.* 9: 648.

2012 Milles, S., **Bui, K.H.**, Koehler, C., Eltsov, M., Beck, M., Lemke, E.A. Facilitated aggregation of FG nucleoporins under molecular crowding conditions. *EMBO Rep*. 14:178-83.

2012 Tokutsu, R., Kato, N., **Bui, K.H.**, Ishikawa, T., Minagawa, J. Revisiting the supramolecular organization of photosystem II in Chlamydomonas reinhardtii. *Journal of Biological Chemistry* 287, 31574-81

2012 Ueno, H., Ishikawa, T., **Bui, K.H.**, Gonda, K., Ishikawa, T., Yamaguchi, T. Mouse respiratory cilia with the asymmetric axonemal structure on sparsely distributed ciliary cells can generate overall directional flow. *Nanomedicine* 8:1081-7

2012 **Bui, K.H.**, Yagi, T., Yamamoto, R., Kamiya, R., Ishikawa, T. Polarity and asymmetry in the arrangement of dynein and related structures in the Chlamydomonas axoneme. *J Cell Biol.,* 198, 913-25

2012 Pigino, G.*, Maheshwari, A.*, **Bui, K.H.***, Shingyoji, C., Kamimura, S., Ishikawa, T. Comparative structural analysis of eukaryotic flagella and cilia from Chlamydomonas, Tetrahymena and sea urchins. *J. Struct. Biol.* 178, 199-206. **(* Shared first author;** *Selected for cover art*)

2011 Pigino, G., **Bui, K.H.**, Maheshwari, A., Lupetti, P., Diener, D., Ishikawa, T. Cryoelectron tomography of radial spokes in cilia and flagella. *J. Cell Biol.* 195, 673-87. (*Selected for cover art*)

2011 **Bui, K.H.**, Pigino, G., Ishikawa, T. 3D structural analysis of eukaryotic flagella/cilia by electron cryo-tomography. *J. Synchrotron Radiation* 18, 2-5

2010 Movassagh, T.*, **Bui, K.H.***, Sakakibara, H., Oiwa, K., Ishikawa, T. Global conformational changes of dynein arms in flagella induced by nucleotides. *Nat. Struct. Mol. Biol*. 17, 761-7. **(* Shared first author**)

2009 **Bui, K.H.**, Sakakibara, H., Movassagh, T., Oiwa, K., Ishikawa, T. Asymmetry of inner dynein arms and inter-doublet links in Chlamydomonas flagella. *J. Cell Biol.* 186, 437-46. (Highlighted article in that issue)

2008 **Bui, K.H.**, Sakakibara, H., Movassagh, T., Oiwa, K., Ishikawa, T. Molecular architecture of inner dynein arms in situ in Chlamydomonas flagella. *J. Cell Biol.* 183, 923-32.

➲ **Book Chapter**

2012 **Bui, K.H**., Ishikawa, T. 3D Structural Analysis of Flagella/Cilia by Cryo-Electron Tomography. *Methods in Enzymology* 524, 305-23.

CONFERENCES

➲ **Invited oral communications**

2017 Dynein 2017 International Workshop, Awaji Island, Japan
2017 Institute of Integrative Cell Biology, Gif Sur Yvette, France
2017 University of Geneva, Switzerland
2017 Swiss Federal Institute of Technology, Zurich, Switzerland
2016 Groupe de Recherche Axé sur la Structure des Protéines (GRASP) Symposium, Montreal
2016 Annual Proteomics Platform Symposium at the McGill University Health Centre
2016 Gordon Research Conference Three Dimensional Electron Microscopy, Hong Kong
2015 CDMC Symposium: Molecular imaging of macromolecular complexes, Uni of Montreal
2015 Microscopy Society of Canada Meeting, Hamilton, Ontario
2015 IRCM Montreal
2015 Department of Biochemistry, McGill University
2014 Groupe de Recherche Axé sur la Structure des Protéines (GRASP) Symposium, Montreal
2014 Laboratory of Molecular Biology, Medical Research Council, Cambridge, United Kingdom.

2014 Hospital of Sick Children, Toronto, Canada.
2014 McGill University, Montreal, Canada.
2012 "Structural biology of flagella/cilia/centriole" Symposium, Paul Scherer Institute, Villigen, Switzerland

➲ **Selected oral communications**

2017 Gordon Research Conference Three Dimensional Electron Microscopy, Les Diablrets, Switzerland.
2014 Life at the edge: The nuclear envelope in nucleocytoplasmic transport, genome organization and cell cycle regulation, Potsdam, Germany.
2009 Interdisciplinary Symposium on 3D Microscopy, Interlaken, Switzerland.
2009 8th European Symposium of The Protein Society, Zurich, Switzerland.

➲ **Poster presentation**

2014 Cilia, Institute Pasteur, Paris, France
2014 Molecular Machines, Heidelberg, Germany
2012 Three-dimensional electron microscopy, GRC, Les Diablerets, Switzerland.
2011 6th International Congress on Electron Tomography, Heidelberg, Germany
2010 Biology of Cilia and Flagella, FASEB Summer Research Conference, Saxtons River, Vermont, USA
2010 Microtubules - Structure, Regulation and Functions, Heidelberg, Germany
2009 2nd International Workshop Dynein, Kobe, Japan
2009 7th International NCCR Symposium on New Trends in Structural Biology, Zurich, Switzerland
2009 Cilia, Mucus & Mucociliary Interactions, GRC, Lucca, Italy
2008 6th International NCCR Symposium on New Trends in Structural Biology, Zurich, Switzerland

TEACHING EXPERIENCE

Training Tutoring practical courses on cryo-EM for EMBL PhD Student (2011–present).
Tutoring *Cryo-Electron Microscopy and 3D Image Processing* course, EMBO Practical Course, EMBL, Heidelberg. (2012)

Mentoring Supervising master, graduate students and postdocs (2008–present).

Teaching Demonstrating in practical for undergraduate students in *Structure determination of macromolecular* course (2007–2010)
Teaching Cytoskeleton Lectures in ANAT262 Introductory to Molecular and Cell Biology at McGill University (Winter Semester), ANAT542 Transmission Electron Microscopy (Winter Semester

PROFESSIONAL ASSOCIATIONS

2010–now **Member**, Swiss Society for Biochemistry

LEADERSHIP & ACTIVITIES

2017 **Organizer**, Groupe de Recherche Axé sur la Structure des Protéines 10th annual Symposium, Montreal, Nov 20, 2017
2017 **Scientific Committee Member**, Canadian Microscopy and Cytometry Symposium, Montreal, May 9-12, 2017
2009 **Organizer**, Biomolecular and Structure Mechanism PhD program retreat
2006–2011 **Administrator**, Mailing list of Vietnamese students in Zurich
2003–2004 **President**, Oversea Vietnamese Student Association in Sydney.

LANGUAGES

- Vietnamese mother-tongue

- English fluent
- German intermediate