

# Grant Kemp

## Curriculum vitae



Stockholm University  
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<b>Research Associate</b> , <i>Stockholm University</i> , Stockholm, Sweden. with Ville Kaila, Department of Biochemistry and Biophysics	<b>2020–present</b>
<b>Researcher</b> , <i>Stockholm University</i> , Stockholm, Sweden. with Gunnar von Heijne, Department of Biochemistry and Biophysics	<b>2018–2020</b>
<b>Postdoctoral Fellow</b> , <i>Stockholm University</i> , Stockholm, Sweden. with Gunnar von Heijne, Department of Biochemistry and Biophysics	<b>2014–2017</b>
<b>PhD</b> , <i>University of Alberta</i> , Edmonton, Canada, Biochemistry. PhD Thesis <i>Towards a structural understanding of eukaryotic Na<sup>+</sup>/H<sup>+</sup> exchangers</i> , Supervisors: Dr. Howard Young and Dr. Larry Fliegel	<b>2007–2013</b>
<b>BSc</b> , <i>University of Alberta</i> , Edmonton, Canada. Specialization in Biochemistry	<b>2003–2007</b>

## Publications

Elfageih, R., Karyolaimos, A., **Kemp, G.**, de Gier, J.-W., von Heijne, G. & Kudva, R. (2020). Cotranslational folding of alkaline phosphatase in the periplasm of *Escherichia coli*. *Protein Science* **29**, 2028–2037. **Also on bioRxiv**: <https://doi.org/10.1101/2020.07.06.189464>.

**Kemp, G.**, Nilsson, O. B., Tian, P., Best, R. B. & von Heijne, G. (2020). Cotranslational folding cooperativity of contiguous domains of  $\alpha$ -spectrin. *Proceedings of the National Academy of Sciences* **117**, 14119–14126. **Also on bioRxiv**: <https://doi.org/10.1101/653360>.

**Kemp, G.**, Kudva, R., de la Rosa, A. & von Heijne, G. (2019). Force-Profile Analysis of the Cotranslational Folding of HemK and Filamin Domains: Comparison of Biochemical and Biophysical Folding Assays. *Journal of Molecular Biology* 1308–1314. ‡**Contributed equally to this work**. **Also on bioRxiv**: <https://doi.org/10.1101/470831>.

**Kemp, G.** & Cymer, F. (2014). Small membrane proteins – elucidating the function of the needle in the haystack. *Biological Chemistry* **365**, 1365–1377.

**Kemp, G.**, Larry, F. & Young, H. S. Membrane transport piece by piece: Production of transmembrane peptides for structural and functional studies. In *Current Protocols in Protein Science*, vol. 29.8, 1–28 (John Wiley & Sons, Inc., 2014).

Müller, M., Kunz, H. H., Schroeder, J. I., **Kemp, G.**, Young, H. S. & Neuhaus, H. E. (2014). Decreased capacity of sodium import into *Arabidopsis* chloroplasts impairs salt tolerance, photosynthesis and plant performance. *Plant J* **78**, 646–658.

Ullah, A., **Kemp, G.**, Lee, B., Alves, C., Young, H. S., Sykes, B. D. & Larry, F. (2013). Structural and functional analysis of transmembrane segment IV of the salt tolerance protein sod2. *J Biol Chem* **288**, 24609–24624.

**Kemp, G.**, Young, H. S. & Fliegel, L. (2008). Structure and function of the human Na<sup>+</sup>/H<sup>+</sup> exchanger isoform 1. *Channels (Austin)* **2**, 329–336.

Moncoq, K., **Kemp, G.**, Li, X., Fliegel, L. & Young, H. S. (2008). Dimeric structure of human Na<sup>+</sup>/H<sup>+</sup> exchanger isoform 1 overproduced in *Saccharomyces cerevisiae*. *J Biol Chem* **283**, 4145–4154. ‡**Contributed equally to this work**.

## Seminars

<b>Hunting for small membrane proteins in eukaryotic cells</b> , invited. CNRS Institut de Microbiologie de la Méditerranée, Marseilles, France	<b>Nov 8, 2019</b>
<b>Picking up the Needles from the Haystack: Identification and characterization of novel small membrane proteins in eukaryotic cells</b> , selected abstract. Canadian Society for Molecular Biosciences 61st Annual Meeting, Banff, Canada	<b>April 13, 2018</b>

<b>Two's Company: Cooperativity in co-translational protein folding</b> , <i>invited</i> . Biochemistry 626 seminar, University of Alberta, Edmonton, Canada.	<b>April 6, 2018</b>
<b>Finding the Needles in the Haystack: explorations of the mammalian small membrane proteome</b> , <i>selected abstract</i> . Biophysical Society: Membrane Receptor Organisation and Signal Transduction, Stockholm, Sweden	<b>May 11, 2017</b>
<b>Studying the ubiquitous human sodium proton exchanger: from mice to the test tube</b> , <i>selected abstract</i> . 2nd Joint Membrane Transport Symposium, Kaiserslautern, Germany	<b>Sept 21, 2010</b>
<b>Studying human NHE1 structure, function and regulation <i>in vitro</i></b> , <i>invited</i> . Na <sup>+</sup> /H <sup>+</sup> Exchanger Satellite Meeting at the 53rd Annual Meeting of the CSBMCB, Banff, Canada	<b>April 17, 2010</b>

## Posters

Presenting author at an international meeting:

CSMB 61st Annual Meeting (April 12, 2018, Banff, Canada)  
 FASEB Molecular Biophysics of Membranes (July 10, 2016, Snowmass, USA)  
 EMBO Mechanisms and regulation of protein translocation (March 21, 2015, Dubrovnik, Croatia)  
 Membrane Transport and Communication (September 29, 2014, Frankfurt, Germany)  
 International Research Training Group Jasper Symposium (August 28, 2012, Jasper, Canada)  
 2nd Joint Membrane Transport Symposium (September 21, 2010, Kaiserslautern, Germany)  
 GRC: Protons & Membrane Reactions (February 22, 2009, Ventura, CA)  
 53rd Annual Meeting of the CSBMCB (August 15, 2010, Banff, Canada)  
 52nd Annual Meeting of the Biophysical Society (February 2, 2008, Long Beach, CA)

## Funding

### Scholarships

<b>CGS Doctoral award</b> , <i>Canadian Institutes of Health Research</i> . \$90,000, National competition	<b>2010–2013</b>
<b>Walter H. Johns Graduate Fellowship</b> , <i>University of Alberta</i> . \$8,870, Tuition award for holding a national scholarship	<b>2011–2013</b>
<b>Top-Up Funding</b> , <i>Alberta Innovates - Technology Futures</i> . \$30,000, Provincial award for holding a national scholarship	<b>2010–2013</b>
<b>Doctoral award</b> , <i>Alberta Heritage Foundation for Medical Research</i> . \$43,000, Provincial competition (declined)	<b>2010–2012</b>
<b>President's Doctoral Prize of Distinction</b> , <i>University of Alberta</i> . \$10,000, Tuition award for holding a national major doctoral scholarship	<b>2010–2011</b>
<b>Doctoral award</b> , <i>Alberta Heritage Foundation for Medical Research</i> . \$20,000, Provincial competition	<b>2009–2010</b>
<b>CGS Master's award</b> , <i>Canadian Institutes of Health Research</i> . \$17,500, National competition	<b>2008–2009</b>
<b>Top-Up Funding</b> , <i>Alberta Innovates - Technology Futures</i> . \$12,500, Provincial award for holding a national scholarship	<b>2008–2009</b>
<b>Queen Elizabeth II award</b> , <i>University of Alberta</i> . \$10,200, Local competition (declined)	<b>2008–2009</b>
<b>Walter H. Johns Graduate Fellowship</b> , <i>University of Alberta</i> . \$4,435, Tuition award for holding a national scholarship	<b>2008–2009</b>
<b>Alexander Rutherford Scholarship</b> , <i>Government of Alberta</i> . \$2,500, Awarded to students who graduated with honours.	<b>2003</b>

### Research Allowances

<b>Canadian Institutes of Health Research</b> , \$15,000.	<b>2010–2013</b>
<b>Alberta Innovates - Technology Futures</b> , \$15,000.	<b>2010–2013</b>
<b>Alberta Heritage Foundation for Medical Research</b> , \$1,500.	<b>2009–2010</b>
<b>Canadian Institutes of Health Research</b> , \$5,000.	<b>2008–2009</b>

## Experience

### Teaching & Mentoring

**Lab coordinator and Lecturer**, *Protein Structure and Function I (Masters' Level)*, 8 h lab. **Sept 2021**  
Developed from scratch a new lab component for a redeveloped course (protein purification, CD, and ITC)

**Masters' student supervisor**. **Jun-Aug 2021**  
Zixin Rong. Project: Design, expression, purification, and functional assessment of a minimal bacterial complex I

**Masters' student supervisor**. **Jun-Aug 2021**  
Mo Huang. Project: Expression and purification of a *De novo* designed transmembrane bundle protein containing a buried ion-pair followed by *in silico* design optimization

**Lecturer**, *Experimental Chemical Methods (Bachelor's Level)*, 6 h lectures, 6 h lab. **May 2021**  
Introduction to protein structure determination and biological, medical and industrial applications

**Lecturer**, *Structural Biochemistry (Masters' Level)*, 6 h lectures. **Sept 2020**  
Macromolecular Structure and Function, and Protein Folding

**Bachelor's student supervisor**, *Bachelor's Degree Project*. **2019**  
Stefan Freigi, now a Laboratory Engineer at Fresenius Kabi Pharmaceuticals. Project: Mapping the cotranslational folding and processing of PhoA

**Bachelor's student supervisor**, *Research practicum course*. **2018**  
Andrés de la Rosa, now a PhD student at Uppsala University, Sweden. Project: the Force-profile analysis of the cotranslational folding of HemK. **Co-authorship on Kemp, Kudva et al. JMB 2019.**

**Bachelor's student supervisor**, *Collaboration with Jilin University, China*. **2016**  
Junru Li, went on to complete a Masters degree in Biomedical Engineering at Columbia University, NY. Project: Characterization of novel human small membrane proteins from the Uniprot database

**Masters' student supervisor**, *Funded by ERASMUS*. **2015**  
Tamara Grund, currently a PhD student in Bayreuth, Germany. Project: Expression and characterization of novel small membrane proteins from human cells

**Summer student supervisor**, *Funded by the Alberta Heritage Foundation*. **2009**  
Supervised Zachary Guenther, now a Graduate of radiology, University of Calgary (fellowship in Thoracic Imaging at Stanford). Project: The optimization of the expression and purification of the human Na<sup>+</sup>/H<sup>+</sup> Exchanger in *Saccharomyces cerevisiae*

### Administrative

**Chair of the National Junior Faculty**. **Sept 2021-present**  
Elected chair by the 9 member organizations. NJF coordinates a united voice working to improve Swedish Academia from the eyes of Early Career Researchers. [@NJF\\_Sweden](https://www.nationaljf.se/) <http://www.nationaljf.se/>

**Breakout Session moderator "Equality, Diversity, and Inclusion"**. **Nov 2020**  
National Junior Faculty Conference: Sustainable Development of Future Academia

**National Junior Faculty Conference: Sustainable Development of Future Academia**. **2019-2020**  
Planning committee member for our inaugural conference that gathered Early Career Researchers, funders, publishers, and academic leaders to propose a vision and plan for the sustainable future of academic research in Sweden.

**(EM)bracing (for) Open Science**, Panel discussion. **May 2019**  
Was the primary organizer for a 2 hour panel discussion about strategies for Early Career Researchers to drive and benefit from the move to Open Science

**National Junior Faculty Steering Committee member**. **2019-2021**  
Serving as a representative of the Stockholm University Young Faculty for Early Career Researchers in Sweden.

**Secretary for the Stockholm University Young Faculty**. **2018-present**  
Executive role in planing events and advocating for Early Career Researchers at Stockholm University  
[@SUYoungFaculty](https://bit.ly/2OWARq9) <https://bit.ly/2OWARq9>.

**President Biochemistry Graduate Student Association**. **2010-2012**  
Local and provincial advocacy, student representative at departmental meetings, a founding member of biomedical science interdepartmental association

**Student representative - Departmental Chair Review Committee**. **2010**  
Gauged student satisfaction with current chair and discussed issues with departmental, faculty and University officials

**Vice-president Biochemistry Graduate Student Association**. **2008-2009**  
Organize student events, involved in local and provincial student advocacy

### Outreach

**Zoom a scientist, Uni Stockholm**, *Birger Sjöbergsgymnasiet, Vänersborg, Sweden*. **Oct 2021**

Zoom lecture and Q&A on what is like to be a biochemist  
**Zoom a scientist, Uni Stockholm, NTI Gymnasiet**, Gothenburg, Sweden. **Mar 2021**  
 Zoom lecture and Q&A on what is like to be a biochemist  
**Zoom a scientist, Uni Stockholm, Widerströmska Gymnasiet**, Huddinge, Sweden. **Feb 2021**  
 Zoom lecture and Q&A on what is like to be a biochemist  
**Zoom a scientist, Uni Stockholm, Kungsholmens Västra Gymnasium**, Stockholm, Sweden. **Feb 2021**  
 Zoom lecture and Q&A on what is like to be a biochemist  
**Skype a Scientist, Kings Mountain Middle School**, Kings Mountain, NC, USA. **Feb 2020**  
 Skype lecture and Q&A on what is like to be a scientist  
**Skype a Scientist, Russellville Middle School**, Russellville, AR, USA. **Oct 2019**  
 Skype lecture and Q&A on what is like to be a scientist

### Management & training

**Evacuation Leader, Stockholm University.** **2020**  
 Training to lead evacuation of University Buildings and practical course on extinguishing laboratory fires.  
**Established a new biochemistry lab.** **2020**  
 Created chemical and equipment lists, carried out the procurement process for large equipment, relocated and set-up a 40 L bioreactor, and established standard laboratory operating procedures and safety protocols.  
**EMBO Laboratory Management for Postdocs, completed.** **2017**  
 Soft skills course on mentoring, time-management, and conflict resolution.  
**Lab management.** **2016-present**  
 Primarily responsible lab member for equipment maintenance and consumable ordering.

### Languages

**English:** Complete fluency *Read/write/speak*  
**French:** Some communication *Read/speak*  
**Swedish:** Proficient *Read/write/speak*

### Mentors

**Dr. Howard S. Young**  
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 University of Alberta  
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**Dr. Larry Fliegel**  
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 University of Alberta  
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**Dr. Gunnar von Heijne**  
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 Department of Biochemistry and Biophysics  
 Stockholm University  
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**Dr. Ville Kaila**  
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 Stockholm University  
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