# EG VCBM 2023

## Eurographics Workshop on Visual Computing for Biology and Medicine

## – Full and Short Paper Proceedings –

**Norrköping, Sweden**
**September 20 – 22, 2023**

### Programme Chairs (Full Papers)

Christian Hansen (University of Magdeburg, Germany)
James Procter (University of Dundee, United Kingdom)
Renata G. Raidou (TU Wien, Austria)

### Programme Chairs (Short Papers)

Daniel Jönsson (Linköping University, Sweden)
Thomas Höllt (TU Delft, The Netherlands)

### Programme Chairs (Posters)

Laura Garrison (University of Bergen, Norway)
Mathieu Linares (KTH Royal Institute of Technology, Sweden)

### General Chairs

Claes Lundström (Linköping University, Sweden)
Daniel Jönsson (Linköping University, Sweden)
Ingrid Hotz (Linköping University, Sweden)
Martin Falk (Linköping University, Sweden)

### Proceedings Production Editor

Dieter Fellner (TU Darmstadt & Fraunhofer IGD, Germany)

delivered by
EUROGRAPHICS DIGITAL LIBRARY
www.eg.org diglib.eg.org

DOI: 10.2312/vcbm.20232019

Dieter W. Fellner, Werner Hansmann, Werner Purgathofer, François Sillion
Series Editors

Published by the Eurographics Association
–Postfach 2926, 38629 Goslar, Germany–
in cooperation with
Institute of Computer Graphics & Knowledge Visualization at Graz University of Technology
and
Fraunhofer IGD (Fraunhofer Institute for Computer Graphics Research), Darmstadt

ISBN 978-3-03868-216-5
ISSN 2070-5786 (online)

The electronic version of the proceedings is available from the Eurographics Digital Library at `https://diglib.eg.org`

# Table of Contents

**Decision Making and Surgery Planning**

**Radiology and Histopathology**

**Storytelling and Communication**

# Table of Contents

## Neuroanatomy and Omics

# Sponsors

ContextVision

VISUAL
SWEDEN

## International Program Committee

Aerts, Jan – Hasselt University, Belgium
Baaden, Marc – Laboratoire de Biochimie Théorique, CNRS, France
Faraj, Noura – Université de Montpellier – LIRMM, France
Furmanova, Katarina – Masaryk University, Czech Republic
Gerrits, Tim – RWTH Aachen University, Germany
Gorgi Zadeh, Shekoufeh – B-IT and Department of Computer Science, University of Bonn, Germany
Gröller, Eduard – TU Wien, Austria
Hotz, Ingrid – Linköping University, Sweden
Kozlikova, Barbora – Masaryk University, Czech Republic
Kuhlen, Torsten – RWTH Aachen University, Germany
Lawonn, Kai – University of Jena, Germany
Linsen, Lars – University of Münster, Germany
Marai, Elisabeta – University of Illinois, Chicago, USA
Meuschke, Monique – Otto-von-Guericke Universität, Germany
Mistelbauer, Gabriel – Cardiovascular Imaging group, Stanford University School of Medicine, USA
Mörth, Eric – Visgroup, Department of Informatics, University of Bergen, Norway
Nieselt, Kay – University of Tuebingen, Germany
Oeltze-Jafra, Steffen – Peter L. Reichertz Institut für Medizinische Informatik, Hannover, Germany
Preim, Bernhard – Otto-von-Guericke University, Germany
Reina, Guido – University of Stuttgart, Germany
Ropinski, Timo – Ulm University, Germany
Schultz, Thomas – University of Bonn, Germany
Sommer, Björn – Royal College of Art, United Kingdom
Vàzquez, Pere-Pau – Facultat d'Informàtica de Barcelona, Spain

# Author Index

## Keynote

## Peering into the Molecular Mechanisms of Life with Data, Computers & Visualization

*Erik Lindahl*
Stockholm University, Sweden

### Biographical Note

Erik is a professor in Computational biophysics at KTH Royal Institute of Technology and Stockholm University. His research focus on that, with help from genetic information and experimental structures, model properties and dynamics in biological macro molecules such as proteins and cell membranes. His work has resulted in one of the worlds most spread programs for biomoleculare modeling (Gromacs), which is used for distributed calculations in the Folding@Home-project. His research group has made important discoveries concerning how proteins are placed i cell membranes, how ion channels are opened and closed, and how virus infects cells by fusion with cell membranes. The development of computation methods for biomolecules has as a link between theory and experiment led to breakthrough in applications, for example within the pharmaceutical industry.

## Capstone

## Deep Learning-Based Automatic Diagnosis and Prognostication in Radiology and Nuclear Medicine Imaging

*Ida Häggström*
Chalmers University of Technology, Sweden

### Biographical Note

Ida is an Associate Professor in the Computer Vision group at the department of Electrical Engineering at Chalmers University of Technology, working with machine and deep learning techniques for medical image analysis. She completed two Master's degrees in Engineering Physics followed by Medical Physics, and proceeded with a PhD in Medical Physics at Umeå University, graduating in 2015. She then moved to Memorial Sloan Kettering Cancer Center in New York, USA for a postdoctoral fellowship, followed by working as a Research Associate and Senior Research Scientist, and returned to Sweden and Chalmers University of Technology in late 2021.