# NIKOLAUS GRIGORIEFF

Professor, University of Massachusetts Medical School
Investigator, Howard Hughes Medical Institute
368 Plantation Street, AS4-2049, Worcester, MA 01605, USA
Tel. +1-774-455-6682, Fax +1-508-721-7027
Email: niko@grigorieff.org

## ACADEMIC EDUCATION

| | |
|---|---|
| 1985 - 1989 | Technische Universität Berlin, Germany<br>• Vordiplom in physics (first grade) |
| 1989 - 1993 | University of Bristol, UK<br>• M.Sc. & Ph.D. in physics (semiconducting materials and devices, electron microscopy) |

## EXPERIENCE

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|---|---|
| 1988 - 1989 | Technische Universität Berlin, Germany<br>• Tutor with teaching responsibilities<br>• Student representative on faculty board, joint responsibility for faculty policies and degree course design |
| 1991 - 1993 | University of Bristol, UK<br>• Demonstrator in undergraduate project laboratory, responsible for student supervision and grading |
| 1993 - 1998 | MRC Laboratory of Molecular Biology, Cambridge, UK<br>• Postdoctoral research assistant<br>• Supervisor for research student, responsible for project design and supervision |
| 1996 - 1998 | Darwin College, Cambridge, UK<br>• Organizer of scientific seminars |
| 1999 - 2013 | Brandeis University, Waltham, MA<br>• Assistant Professor (1999), Associate Professor (2004), Full Professor (2006) |
| 2013 - 2018 | Janelia Research Campus, Ashburn, VA<br>•Group leader |
| 2018 - present | University of Massachusetts Medical School, Worcester, MA<br>• Professor |

## AWARDS, FELLOWSHIPS AND APPOINTMENTS

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| 1988-90 | Award from the Studienstiftung des Deutschen Volkes (national student award based on university nomination and interview) |
| 1989 | Award from DAAD (German Academic Exchange Service) |
| 1990-93 | Student grant from British Telecommunications plc. |
| 1995-96 | Research fellowship from Deutsche Forschungsgemeinschaft |
| 1996-98 | Research fellowship at Darwin College, Cambridge, England |
| 2000-present | Investigatorship, Howard Hughes Medical Institute |
| 2004-05 | Research fellowship from the Humboldt Foundation |
| 2015-present | Editor, eLife Sciences |
| 2021 | Election to the National Academy of Sciences, USA |

**RESEARCH ARTICLES**

Grigorieff, N., Cherns, D., Yates, M. J., Hockly, M., Perrin, S. D. & Aylett, M. R. (1993). Electron microscopy of ultra-thin buried layers in InP and InGaAs. *Phil. Mag.* **68**, 121–136.

Grigorieff, N., Cherns, D., Preston, A. R. & Yates, M. J. (1995). Models for termination of crystal boundaries in the theory of transmission electron diffraction and comparison with experimental data. *Acta Cryst.* **A51**, 343–350.

Grigorieff, N., Beckmann, E. & Zemlin, F. (1995). Lipid location in deoxycholate-treated purple membrane at 2.6 Å. *J. Mol. Biol.* **254**, 404–415.

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Grigorieff, N., Ceska, T. A., Downing, K. H., Baldwin, J. M. & Henderson, R. (1996). Electron-crystallographic refinement of the structure of bacteriorhodopsin. *J. Mol. Biol.* **259**, 393–421.

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Grigorieff, N. (1998). Three-dimensional structure of bovine NADH:ubiquinone oxidoreductase (complex I) at 22 Å in ice. *J. Mol. Biol.* **277**, 1033–1046.

Smith, C. J., Grigorieff, N. & Pearse, B. M. F. (1998). Clathrin coats at 21 Å resolution - A cellular assembly designed to recycle multiple membrane receptors. *EMBO J.* **17**, 4943–4953.

Lam, Y.-M., Grigorieff, N. & Goldbeck-Wood, G. (1999) Direct visualisation of micelles of pluronic block coploymers in aqueous solution by cryo-TEM. *Phys. Chem. Chem. Phys*. **1**, 3331–3334.

Grigorieff, N. & Grigorieff, R. D. (1999). Asymptotisches Verhalten des Erwartungswertes für den größten Wert bei n unabhängigen Beobachtungen einer normalverteilten Variablen. *Reprint-Reihe Fachbereich Mathematik, Technische Universität Berlin* Nr. 647.

Grigorieff, N. (2000) Resolution Measurement in Structures Derived from Single Particles. *Acta Cryst.* **D56**, 1270–1277.

Mindell, J. A., Maduke, M., Miller, C. & Grigorieff, N. (2001). Projection structure of a ClC-type chloride channel at 6.5 Å resolution. *Nature* **409**, 219–223.

Sokolova, O., Kolmakova-Partensky, L. & Grigorieff, N. (2001). Three-dimensional structure of a voltage-gated potassium channel at 2.5 nm resolution. *Structure* **9**, 215–220.

Pirruccello, M.M., N. Grigorieff, and J.A. Mindell, (2002) Electron diffraction of a bacterial ClC-type chloride channel. *Novartis Found Symp.* **245**,193–203.

McGovern, S. L., Caselli, E., Grigorieff, N. & Shoichet, B. K. (2002) A common mechanism underlying promiscuous inhibitors from virtual and high-throughput screening. *J. Med. Chem.* **45**, 1712–1722.

Jurica, M. S., Licklider, L. J., Gygi, S. P., Grigorieff, N. & Moore, M. J. (2002) Purification and characterization of native spliceosomes suitable for three-dimensional structural studies. *RNA* **8**, 426–439.

Mindell, J. A. & Grigorieff, N. (2003) Accurate determination of local defocus and specimen tilt in electron microscopy. *J. Struct. Biol*. **142**, 334–347.

Furst, J., Sutton, R. B., Chen, J., Brunger, A. T. & Grigorieff, N. (2003) Electron Cryo-Microscopy Structure of N-ethyl Maleimide Sensitive Factor at 11 Å Resolution. *EMBO J*. **22**, 4365–4374.

Wolf, M., Eberhart, A., Glossmann, H., Striessnig, J. & Grigorieff, N. (2003) Visualization of the Domain Structure of an L-Type $Ca^{2+}$ Channel Using Electron Cryo-Microscopy. *J. Mol. Biol*. **332**, 171–182.

Sokolova, O., Accardi, A., Gutierrez, D., Lau, A., Rigney, M. & Grigorieff, N. (2003). Conformational changes in the C-terminus of *Shaker* $K^+$ channel, bound to the rat Kvβ2-subunit. *PNAS* **100**, 12607–12612.

Chen, J. Z., Furst, J., Chapman, M. S. & Grigorieff, N. (2003) Low-resolution structure refinement in electron microscopy. *J. Struct. Biol*. **144**, 144–151.

Jurica, M. S., Sousa, D., Moore, M. J. & Grigorieff, N. (2004) Three-dimensional structure of C complex spliceosomes by electron microscopy. *Nat. Struct. Mol. Biol.* **11**, 265–269.

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Kim, L. A., Furst, J., Gutierrez, D., Butler, M., Xu, S., Goldstein, S. A. N. & Grigorieff, N. (2004) Three-Dimensional Structure of Kv4.2-KChiP2 Channels by Electron Microscopy at 21 Å. *Neuron* **41**, 513–519.

Stewart, A. & Grigorieff, N. (2004) Noise bias in the refinement of structures derived from single particles. *Ultramicroscopy* **102**, 67–84.

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Fotin, A., Cheng, Y., Grigorieff, N., Walz, T., Harrison, S. C. & Kirchhausen, T. (2004) Structure of an auxilin-bound clathrin coat and its implications for the mechanism of uncoating. *Nature* **432**, 649–653.

Rodal, A. A., Sokolova, O., Robins, D. B., Daugherty, K. M., Hippenmeyer, S., Riezman, H., Grigorieff, N. & Goode, B. L. (2005) Conformational changes in the Arp2/3 complex leading to actin nucleation. *Nat. Struct. Mol. Biol.* **12**, 26–31.

Cheng, Y., Wolf, E., Larvie, M., Zak, O., Aisen, P., Grigorieff, N., C. Harrison, S. C. & Walz, T. (2006) Single Particle Reconstructions of the Transferrin–transferrin receptor complex obtained with different specimen preparation techniques. *J. Mol. Biol.* **355**, 1048–1065.

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Stroupe, M. E., Tange, T. Ø., Thomas, D. R., Moore, M. J. & Grigorieff. N. (2006) The three-dimensional architecture of the EJC core. *J. Mol. Biol.* **360**, 743–749.

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Schmidt, M., Sachse, C., Richter, W., Xu, C., Fändrich, M. & Grigorieff, N. (2009) Comparison of Alzheimer Aβ(1-40) and Aβ(1-42) amyloid fibrils reveals similar protofilament structures. *PNAS* **106**, 19813–19818.

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Settembre, E., Chen, J. Z., Dormitzer, P. R., Grigorieff, N. & Harrison, S. C. (2011) Atomic model of an infectious rotavirus particle. *EMBO J.* **30**, 408–416.

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Sindelar, C. V. & Grigorieff, N. (2012) Optimal noise reduction in 3D reconstructions of single particles using a volume-normalized filter. *J. Struct. Biol.* **180**, 26–38.

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Campbell, M. G., Cheng, A., Brilot, A. F., Moeller, A., Lyumkis, D., Veesler, D., Pan, J., Harrison, S. C., Potter, C. S., Carragher, B. & Grigorieff, N. (2012) Movies of ice-embedded particles enhance resolution in electron cryo-microscopy. *Structure* **20**, 1823–1828.

Estrozi, L. F., Settembre, E. C., Goret, G., McClain, B., Zhang, X., Chen, J. Z., Grigorieff, N. & Harrison, S.C. (2013) Location of the dsRNA-dependent polymerase, VP1, in rotavirus particles. *J. Mol. Biol.* **425**, 124–132.

Lyumkis, D., Brilot, A. F., Theobald, D. L. & Grigorieff, N. (2013) Likelihood-based classification of cryo-EM images using FREALIGN. *J. Struct. Biol.* **183**, 377–388.

Brilot, A. F., Korostelev, A. A., Ermolenko, D. N. & Grigorieff N. (2013) Structure of the ribosome with elongation factor G trapped in the pre-translocation state. *PNAS* **110**, 20994–20999.

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