

Highlights

PUMPkin publications yield more than 1000 yearly citations in 2015

Embedment of PUMPkin research is secured at numerous institutions, both in Denmark and globally

A high international level is reflected by the rich publication activity

Research

In 2015 PUMPkin researchers published a line of articles on central long-term projects and a total of 33 peer-reviewed articles and reviews in highly respected journals. Amongst others can be mentioned:

- Laursen *et al.* – Structures and characterization of digoxin- and bufalin-bound Na⁺,K⁺-ATPase compared with the ouabain-bound complex. *PNAS*. Combined with articles from 2011 and 2013 regarding ouabain-bound Na⁺,K⁺-ATPase, this study describes the structural and functional basis for specificity and differential effect of different cardiotonic steroids/heart glycosides.

- Mattle *et al.* – A Sulfur-Based Transport Pathway in Cu⁺-ATPases. *EMBO Reports*. An interdisciplinary collaboration with researchers in Florence and at Caltech led to a description of the transport route in the copper pump defined primarily by sulfur-containing amino acid residues (cysteine and methionine). The results are of key importance for our understanding of mutations causing Menkes' and Wilson's diseases.

- Bublitz *et al.* – Structural studies of P-type ATPase-ligand complexes using an X-ray free-electron laser. *IUCr*. A large consortium initiative started in 2011 under the leadership of PUMPkin led to the first X-ray Free Electron Laser studies on mammalian membrane transport proteins. The project included for example 14 days of research at the CXI instrument at the XFEL source LCLS at Stanford Linear Accelerator Campus in California for a team of six PUMPkin researchers (project expenses supported by DFF-FNU) in collaboration with Ilme Schlichting's laboratory from MPI-Heidelberg, as well with Matthias Guttman and Anders Markvardsen from the Rutherford Laboratory UK, and Sebastian Boutet and colleagues from the LCLS-CXI.
- Poulsen, Lopez-Marques *et al.* – A phospholipid uptake system in the model plant *Arabidopsis thaliana*. *Nature Comm*. This study proved for the first time, and quite thought-provoking, that plants take up phospholipids as nutrients from the soil using P4-ATPase lipid flippases. This can radically change our view of nutrient circulation, agriculture and biotechnology.

In addition, a continued large, worldwide attention to the Palmgren group's launch of the concept of "rewilding" plant genetic engineering, including features in influential channels such as DR-P1, TV2 News, BBC, and Huffington Post (see also the Annual Report 2014).

Prizes and awards

PUMPkin researchers received numerous recognitions 2015. Amongst others can be mentioned;

- PUMPkin postdocs Maïke Bublitz received tenure track positions at the University of Oxford
- Postdoc Joseph Lyons received fellowship from the Lundbeck Foundation for P4/P5-ATPase studies (AU), and postdoc Henriette Autzen received a fellowship from DFF-FNU and the Lundbeck Foundation for cryoEM studies at Yifan Cheng's group, UCSF; pioneer of membraneprotein electron-microscopy studies
- PhD Oleg Sitsel received the PhD award from the Estonian Research Council
- PhD student Aljona Kotsubei (cotutelle KU Leuven) received an IWT doctoral grant (Belgium)
- Richard Hilleary and Lindsay Staviola received DG / NSF postdoctoral scholarships for studies at KU and AU, respectively
- Center Director Poul Nissen received the Aminoff prize from the Royal Swedish Academy of Science

Meetings and conferences

PUMPkin researchers contributed to the organization of the 40th FEBS Congress in Berlin ("membrane transport" session), the 19th Conference on Calcium Binding Proteins in Nashville, as well as the 4th Symposium on ATP1A3 in Disease in Washington DC.