OptiPrep™ Reference List RS14

Purification of organelles and membranes from non-mammalian eukaryotes

- This is a **Reference List** of publications reporting the use of OptiPrep™ for the purification and analysis of organelles from a variety of non-mammalian eukaryotic cells and tissues.
- This **Reference List** does not contain information on organelles and membranes from ***Saccharomyces cerevisiae:*** for this source see **RS15**
- **Important Note: RS12 "Endocytosis – a bibliographical review", although containing principally references on mammalian cells also contains sections on non-mammalian cells.**
- **For extracellular vesicle references see RS11**
- **For centrifugation strategies see Application Sheet S50**

- The reference list is divided into **eleven principal eukaryotic groups;** within each of these groups papers are further sorted according to **species** and/or **organelle type**.

- References are listed alphabetically according to **first author** and then, if required, chronologically. To aid identification of research topics, these are highlighted in blue.

- **For completeness Section 11 lists a few papers describing Gram-negative bacteria containing acidocalcisome-like particles**

- **Review articles (Section 12)** are also listed.

Published papers have been assigned to one of the following principal sections:

1. Algae

1-1. *Chlamydomonas reinhardtii*

Acidocalcisomes-like organelles, chloroplasts and mitochondria

Ruiz, F.A., Marchesini, N., Seufferheld, M., Govindjee and Docampo, R. (2001) *The polyphosphate bodies of Chlamydomas reinhardtii possess a proton pumping pyrophosphatase and are similar to acidocalcisomes* J. Biol. Chem., **276**, 46196-46203

Ciliary structure and function

Diener, D.R., Lupetti, P. and Rosenbaum, J.L. (2015) *Proteomic analysis of isolated ciliary transition zones reveals the presence of ESCRT proteins* Curr. Biol., **25**, 379–384

Long, H., Zhang, F., Xu, N., Liu, G., Diener, D.R., Rosenbaum, J.L. and Huang, K. (2017) *Comparative analysis of ciliary membranes and ectosomes* Curr. Biol., **26**, 3327–3335

Cytoplasmic vesicles
Casem, M.L. (2016) *Cytoskeleton and intracellular motility* In "Case studies in cell biology" Elsevier Inc, pp 127-156
Wood, C.R. and Rosenbaum, J.L. (2014) *Proteins of the ciliary axoneme are found on cytoplasmic membrane vesicles during growth of cilia* Curr. Biol., **24**, 1114-1120

Flagella membrane vesicles
Huang, K., Diener, D.R., Mitchell, A., Pazour, G.J., Witman, G.B. and Rosenbaum, J.L. (2007) *Function and dynamics of PKD2 in Chlamydomonas reinhardtii flagella* J. Cell Biol., **179**, 501-514

HAP2 fusion protein analysis
Baquero, E., Fedry, J., Legrand, P., Krey, T. and Rey, F.A. (2019) *Species-specific functional regions of the green alga gamete fusion protein HAP2 revealed by structural studies* Structure **27**, 113–124

1-2. *Cyanidioschyzon merolae*

Chloroplasts/mitochondria
Nishida, K., Yagisawa, F., Kuroiwa, H., Nagata, T. and Kuroiwa, T. (2005) *Cell cycle-regulated microtubule-independent organelle division in Cyanidioschyzon merolae* Mol. Biol. Cell, **16**, 2493-2502

Mitochondria
Nishida, K., Yagisawa, F., Kuroiwa, H., Yoshida, Y. and Kuroiwa, T. (2007) *WD40 protein Mda1 is purified with Dnm1 and forms a dividing ring for mitochondria before Dnm1 in Cyanidioschyzon merolae* Proc. Natl. Acad. Sci. USA, **104**, 4736-4741

Peroxisomes
Imoto, Y., Abe, Y., Okumoto, K., Honsho, M., Kuroiwa, H., Kuroiwa, T. and Fujiki, Y. (2017) *Defining the dynamin-based ring organizing center on the peroxisome-dividing machinery isolated from Cyanidioschyzon merolae* J. Cell Sci., **130**, 853-867

Polyphosphate vacuoles
Yagisawa, F., Nishida, K., Yoshida, M., Ohnuma, M., Shimada, T., Fujiwara, T., Yoshida, Y., Misumi, O., Kuroiwa, H. and Kuroiwa, T. (2009) *Identification of novel proteins in isolated polyphosphate vacuoles in the primitive red alga Cyanidioschyzon merolae* Plant J., **60**, 882–893

1-3. *Emiliania huxleyi*

Extracellular vesicles
Schatz, D., Rosenwasser, S., Malitsky, S., Wolf, S.G., Feldmesser, E. and Vardi, A. (2017) *Communication via extracellular vesicles enhances viral infection of a cosmopolitan alga* Nat. Microbiol., **2**, 1485–1492

2. Amphibia (*Xenopus*)

ER/Golgi/plasma membrane
Carattino, M.D., Liu, W., Hill, W.G., Satlin, L.M. and Kleyman, T.R. (2007) *Lack of a role of membrane-protein interactions in flow-dependent activation of ENaC* Am. J. Physiol. Renal Physiol., **293**, F316-F324
Kuiper, R.P., Bouw, G., Janssen, K.P.C., Rotter, J., van Herp, F. and Martens, G.J.M. (2001) *Localization of p24 putative cargo receptors in the early secretory pathway depends on the biosynthetic activity of the cell* Biochem. J., **360**, 421-429

Lipid rafts
Bates, R.C., Fees, C.P., Holland, W.L., Winger, C.C., Batbayar, K., Ancar, R., Bergren, T., Petcoff, D. and Stith, B.J. (2014) *Activation of Src and release of intracellular calcium by phosphatidic acid during Xenopus laevis fertilization* Dev. Biol., **386**, 165-180

Membrane/cytoplasm
Hülsmann, B.B., Labokha, A.A. and Görlich, D. (2012) *The permeability of reconstituted nuclear pores provides direct evidence for the selective phase model* Cell, **150**, 738–751

Nuclei
Amin, N.M., Greco, T.M., Kuchenbrod, L.M., Rigney, M.M., Chung, M-I., Wallingford, J.B., Cristea, I.M. and Conlon, F.L. (2014) *Proteomic profiling of cardiac tissue by isolation of nuclei tagged in specific cell types (INTACT)* Development, **141**, 962-973

3. Fish

Endosomes/lysosomes

Yue, Y., Behra, R., Sigg, L., Suter, M, J-F., Pillai, S and Schirmer, K. (2016) *Silver nanoparticle–protein interactions in intact rainbow trout gill cells* Environ. Sci. Nano, **3**, 1174

Exosomes

Hyenne, V., Ghoroghi, S, Collot, M., Bons, J., Follain, G., Harlepp, S., Mary, B., Bauer, J., Mercier, L., Busnelli, I et al (2019) *Studying the fate of tumor extracellular vesicles at high spatiotemporal resolution using the zebrafish embryo* Devel. Cell, 48, 554–572

Lipid rafts and caveolae

Adachi, T., Sato, C. and Kitajima, K. (2007) *Membrane microdomain formation in crucial in epiboly during gastrulation of medaka* Biochem. Biophys. Res. Commun., **358**, 848-853

Adachi, T., Sato, C., Kishi, Y., Totani, K., Murata, T. Usui, T. and Kitajima, K. (2009) *Membrane microdomains from early gastrula embryos of medaka, Oryzias latipes, are a platform of E-cadherin- and carbohydrate-mediated cell–cell interactions during epiboly* Glycoconj. J. **26**, 285–299

Sezgin, E., Azbazdar, Y., Ng, X.W., The, C., Simons, K., Weidinger, G., Wohland, T., Eggeling, C. and Ozhan, G. (2017) *Binding of canonical Wnt ligands to their receptor complexes occurs in ordered plasma membrane environments* FEBS J., **284**, 2513–2526

Zehmer, J.K. and Hazel, J.R. (2003) *Plasma membrane rafts of rainbow trout are subject to thermal acclimation* J. Exp. Biol., **206**, 1657-1667

Zehmer, J.K. and Hazel, J.R. (2005) *Thermally induced changes in lipid composition of raft and non-raft regions of hepatocyte plasma membranes of rainbow trout* J. Exp. Biol., **208**, 4283-4290

Migrasomes

Jiang, D., Jiang, Z., Lu, D., Wang, X., Liang, H., Zhang, J., Meng, Y., Li, Y., Wu, D., Huang, Y. et al (2019) *Migrasomes provide regional cues for organ morphogenesis during zebrafish gastrulation* Nat. Cell Biol., **21**, 966–977

Mitochondria

Yue, Y., Behra, R., Sigg, L., Suter, M, J-F., Pillai, S and Schirmer, K. (2016) *Silver nanoparticle–protein interactions in intact rainbow trout gill cells* Environ. Sci. Nano, **3**, 1174

Signalling organelles: see "Migrasomes" above

4. Fungi

4-1. *Candida albicans*

Plasma membane (lipid rafts)

Aeed, P.A., Sperry, A.E., Young, C.L., Nagiec, M.M. and Elhammer, A.P. (2004) *Effect of membrane perturbants on the activity and phase distribution of inositol phosphorylceramide synthase; development of a novel assay* Biochemistry, **43**, 8483-8493

Insenser, M., Nombela, C., Molero, G. and Gil, C. (2006) *Proteomic analysis of detergent-resistant membranes from Candida albicans* Proteomics, **6,** Suppl. **1**., S74-S81

Ragni, E., Calderon, J., Fascio, U., Sipiczki, M., Fonzi, W.A. and Popolo, L. (2011) *Phr1p, a glycosylphosphatidylinsitol-anchored β(1,3)-glucanosyltransferase critical for hyphal wall formation, localizes to the apical growth sites and septa in Candida albicans* Fungal Genet. Biol., **48**, 793–805

Wang, L., Jia, Y., Tang, R-J., Xu, Z., Cao, Y-B., Jia, X-M. and Jiang, Y-Y. (2012) *Proteomic analysis of Rta2p-dependent raft-association of detergent-resistant membranes in Candida albicans* PLoS One, **7**: e37768

Secretory vesicles

Caballero-Lima, D., Hautbergue, G.M., Wilson, S.A. and Sudbery, P.E. (2014) *In Candida albicans hyphae, Sec2p is physically associated with SEC2 mRNA on secretory vesicles* Mol. Microbiol., **94**, 828–842

4-2. *Cladosporium resinae*

Mitochondria, vacuoles

Goswami, P. and Cooney, J.J. (1999) *Subcellular location of enzyme involved in oxidation on n-alkane by Cladosporium resinae* Appl. Microbiol. Biotechnol., **51**, 860-864

4-3. *Cryptococcus neoformans*

Exocytosis and extracellular vesicles

Oliveira, D.L., Nimrichter, L., Miranda, K., Frases, S., Faull, K.F., Casadevall, A. and Rodrigues, M.L. (2009) *Cryptococcus neoformans cryoultramicrotomy and vesicle fractionation reveals an intimate association between membrane lipids and glucuronoxylomannan* Fungal Genet. Biol., **46**, 956–963

Wolf, J.M., Rivera, J. and Casadevall, A. (2012) *Serum albumin disrupts Cryptococcus neoformans and Bacillus anthracis extracellular vesicles* Cellular Microbiology (2012) **14**, 762–773

Lipid rafts

He, X., Shi, X., Puthiyakunnon, S., Zhang, L., Zeng, Q., Li, Y., Boddu, S., Qiu, J., Lai, Z. et al (2016) *CD44-mediated monocyte transmigration across Cryptococcus neoformans-infected brain microvascular endothelial cells is enhanced by HIV-1 gp41-I90 ectodomain* J. Biomed. Sci., **23**: 28

Huang, S-H., Wu, C-H., Chang, Y.C., Kwon-Chung, K.J., Brown, R.J. and Jong, A. (2012) *Cryptococcus neoformans-derived microvesicles enhance the pathogenesis of fungal brain infection* PLoS One, **7**, e48570

4-4. *Neurospora crassa*

Glyoxysomes

Managadze, D., Würtz, C., Wiese, S., Meyer, H.E., Niehaus, G., Erdmann, R., Warscheid, B. and Rottensteiner, H. (2010) *A proteomic approach towards the identification of the matrix protein content of the two types of microbodies in Neurospora crassa* Proteomics, **10**, 3222–3234

4-5. *Paracoccidioides brasiliensis*

Mitochondria and peroxisomes

Brito, W. deA., Rezende, T.C.V., Parente, A.F., Ricart, C.A.O., de Sousa, M.V., Báo, N. and Soares, C.M.deA. (2011) *Identification, characterization and regulation studies of the aconitase of Paracoccidioides brasiliensis* Fungal Biol., **115**, 697-707

5. Insects (arthropoda)

5-1 Aedes cell lines

Vora, A., Zhou, W., Londono-Renteria, B., Woodson, M., Sherman, M.B., Colpitts, T.M., Neelakanta, G. and Sultana, H. (2018) *Arthropod EVs mediate dengue virus transmission through interaction with a tetraspanin domain containing glycoprotein Tsp29Fb* Proc. Natl. Acad. Sci. USA, **115**, E6604–E6613

5-2. *Bombyx mori*

Lysosomes

Shiba, H., Yabu, T., Sudayama, M., Mano, N., Arai, N., Nakanishi, T. and Hosono, K. (2016) *Sequential steps of macroautophagy and chaperone-mediated autophagy are involved in the irreversible process of posterior silk gland histolysis during metamorphosis of Bombyx mori* J. Exp. Biol., **219**, 1146-1151

5-3. Chironomids

Membrane vesicles, separation from proteins

Hatanaka, R., Hagiwara-Komoda, Y., Furuki, T., Kanamori, Y., Fujita, M., Cornette, R., Sakurai, M., Okuda, T. and Kikawada, T. (2013) *An abundant LEA protein in the anhydrobiotic midge, PvLEA4, acts as a molecular shield by limiting growth of aggregating protein particles* Insect Biochem. Mol. Biol., **43**, 1055-1067

5-4. *Drosophila/Flies*

Endosomes/endocytosis

Lee, J., Song, M. and Hong, S. (2013) *Negative regulation of the novel norpAP24 suppressor, diehard4, in the endo-lysosomal trafficking underlies photoreceptor cell degeneration* PLoS Genet., **9**: e1003559

Lee, Y.S., Pressman, S., Andress, A.P., Kim, K., White, J.L., Cassidy, J.J., Li, X., Lubell, K. et al (2009) *Silencing by small RNAs is linked to endosomal trafficking* Nat. Cell Biol., **11**, 1150-1157

Tiklová, K., Senti, K-A., Wang, S., Gräslund, A. and Samakovlis, C. (2010) *Epithelial septate junction assembly relies on melanotransferrin iron binding and endocytosis in Drosophila* Nature Cell. Biol., **12**, 1071-1078

ER/Golgi/plasma membrane

Adolfsen, B., Sarawati, S., Yoshihara, M. and Littleton, J.T. (2004) *Synaptotagmins are trafficked to distinct subcellular domains including the postsynaptic compartment* J. Cell Biol., **166**, 249-260

Beronja, S., Laprise, P., Papoulas, O., Pellikka, M., Sisson, J. and Tepass, U. (2005) *Essential function of Drosophila Sec6 in apical exocytosis of epithelial photoreceptor cells* J. Cell Biol., **169**, 635-646
Betschinger, J., Eisenhaber, F. and Knoblich, J.A. (2005) *Phosphorylation-induced autoinhibition regulates the cytoskeletal protein lethal (2) giant larvae* Curr. Biol., **15**, 276-282
Gatto, L., Breckels, L.M., Burger, T., Nightingale, D.J.H., Groen, A.J., Campbell, C., Nikolovski, N., Mulvey, C.M. et al (2014) *A foundation for reliable spatial proteomics data analysis* Mol. Cell. Proteom., **13**, 1937-1952
Khanna, M.R., Stanley, B.A. and Thomas, G.H. (2010) *Towards a membrane proteome in Drosophila: a method for the isolation of plasma membrane* BMC Genomics 2010, **11**: 302
Kim, A-Y., Seo, J.B., Kim, W-t., Choi, H.J., Kim, S-Y., Morrow, G., Tanguay, R.M., Steller, H. and Koh, Y.H. (2015) *The pathogenic human Torsin A in Drosophila activates the unfolded protein response and increases susceptibility to oxidative stress* BMC Genom., **16**: 338
Niimura, M., Isoo, N., Takasugi, N., Tsuruoka, M., Ui-Tei, K., Saigo, K., Morohashi, Y., Tomita, T. and Iwatsubo, T. (2005) *Aph-1 contributes to the stabilization and trafficking of the γ-secretase complex through mechanisms involving intermolecular and intramolecular interactions* J. Biol. Chem., **280**, 12967-12975
Panneels, V., Eroglu, C., Cronet, P. and Sinning, I. (2003) *Pharmacological characterization and immunoaffinity purification of metabotropic glutamate receptor from Drosophila overexpressed in Sf9 cells* Prot. Expr. Purif., **20**, 275-282
Papoulas, O., Hays, T.S. and Sisson, J.C. (2005) *The golgin lava lamp mediates dynein-based Golgi movements during Drosophila cellularization* Nat. Cell Biol., **7**, 612-618
Satori, C.P., Henderson, M.M., Krautkramer, E.A., Kostal, V., Distefano, M.M. and Arriaga, E.A. (2013) *Bioanalysis of eukaryotic organelles* Chem. Rev., **113**, 2733−2811
Stein, D., Charatsi, I., Cho, Y.S., Zhang, Z., Nguyen, J., DeLotto, R., Luschnig, S. and Moussian, B. (2010) *Localization and activation of the Drosophila protease Easter require the ER-resident saposin-like protein Seele* Curr. Biol., **20**, 1953–1958
Tan, D.J.L., Dvinge, H., Christoforou, A., Bertone, P., Arias, A.M. and Lilley, K.S. (2009) *Mapping organelle proteins and protein complexes in Drosophila melanogaster* J. Proteome Res., **8**, 2667–2678
Wan, D., Zhang, Z.C., Zhang, X., Li, Q. and Han, J. (2015) *X chromosome-linked intellectual disability protein PQBP1 associates with and regulates the translation of specific mRNAs* Hum. Mol. Genet., **24**, 4599–4614
Zarnescu, D.C., Jin, P., Betschinger, J., Nakamoto, M., Wang, Y., Dockendorff, T.C., Feng, Y., Jongens, T.A., Sisson, J.C., Knoblich, J.A., Warren, S.T. and Moses, K. (2005) *Fragile X protein functions with Lgl and the PAR complex in flies and mice* Dev. Cell, **8**, 43-52

Exocytosis and exosomes

Beronja, S., Laprise, P., Papoulas, O., Pellikka, M., Sisson, J. and Tepass, U. (2005) *Essential function of Drosophila Sec6 in apical exocytosis of epithelial photoreceptor cells* J. Cell Biol., **169**, 635-646
Kerr, C,H., Dalwadi, U., Scott, N.E., Yip, C.K., Foster, L.J. and Jan, E. (2018) *Transmission of Cricket paralysis virus via exosome-like vesicles during infection of Drosophila cells* Sci. Rep., **8**: 17353
Matusek, T., Wendler, F., Polès, S., Pizette, S., D'Angelo, G., Fürthauer, M. and Thérond, P.P. (2014) *The ESCRT machinery regulates the secretion and long-range activity of Hedgehog* Nature, **516**, 99-103
Shibata, T., Hadano, J., Kawasaki, D., Dong, X. and Kawabata, S-i. (2017) *Drosophila TG-A trans-glutaminase is secreted via an unconventional Golgi-independent mechanism involving exosomes and two types of fatty acylations* J. Biol. Chem., **292**, 0723–10734

Lipid rafts

Eroglu, C., Brügger, B., Wieland, F. and Sinning, I. (2003) *Glutamate-binding affinity of Drosophila metabotropic glutamate receptor is modulated by association with lipid rafts* Proc. Natl. Acad. Sci. USA, **100**, 10219-10224
Goyal, G., Zheng, J., Adam, E., Steffes, G., Jain, M., Klavins, K. and Hummel, T. (2019) *Sphingolipid-dependent Dscam sorting regulates axon segregation* Nat. Comm., **10**: 813
Hebbar, S., Lee, E., Manna, M., Steinert, S., Kumar, G.S., Wenk, M., Wohland, T., and Kraut, R. (2008) *A fluorescent sphingolipid binding domain peptide probe interacts with sphingolipids and cholesterol-dependent raft domains* J. Lipid Res. **49,** 1077-1089
Hoehne, M., de Couet, H.G., Stuermer, C.A.O. and Fischbach, K-F. (2005) *Loss- and gain-of-function analysis of the lipid raft proteins reggie/flotillin in Drosphilia: they are posttranslationally regulated, and misexpression interferes with wing and eye development* Mol. Cell. Neurosci., **30**, 326-338
Rietveld, A., Neutz, S., Simons, K. and Eaton, S. (1999) *Association of sterol- and glycosylphosphatidy-linositol-linked proteins with Drosophilia raft lipid microdomains* J. Biol. Chem., **274**, 12049-12054
Sanxaradis, P.D., Cronin, M.A., Rawat, S.S., Waro, G., Acharya, U. and Tsunoda, S. (2007) *Light-induced recruitment of INAD-signaling complexes to detergent-resistant lipid rafts in Drosophila receptors* Mol Cell. Neurosci., **36**, 36-46

West, R.J.H., Briggs, L., Fjeldstad, M.P., Ribchester, R.R. and Sweeney, S.T. (2018) *Sphingolipids regulate neuromuscular synapse structure and function in Drosophila* J. Comp. Neurol., **526**, 1995–2009
Zhai, L., Chaturvedi, D. and Cumberledge, S. (2004) *Drosophila Wnt-1 undergoes a hydrophobic modification and is targeted to lipid rafts, a process that requires porcupine* J. Biol. Chem., **279**, 33220-33227

Membrane vesicles, separation from proteins

Kruppa, A.J., Ott, S., Chandraratna, D.S., Irving, J.A., Page, R.M., Speretta, E., Seto, T., Camargo, L.M., Marciniak, S.J., Lomas, D.A. and Crowther, D.C. (2013) *Suppression of Aβ toxicity by puromycin-sensitive aminopeptidase is independent of its proteolytic activity* Biochim. Biophys. Acta, **1832**, 2115–2126
Sing, A., Tsatskis, Y., Fabian, L., Hester, I., Rosenfeld, R., Serricchio, M., Yau, N., Bietenhader, M., Shanbhag, R., Jurisicova, A. et al (2014) *The atypical cadherin fat directly regulates mitochondrial function and metabolic state* Cell, **158**, 1293–1308

Mitochondria

Odnokoz, O., Nakatsuka, K., Klichko, V.I., Nguyen, J., Solis, L.C., Ostling, K., Badinloo, M., Orr, W.C. and Radyuk, S.N. (2017) *Mitochondrial peroxiredoxins are essential in regulating the relationship between Drosophila immunity and aging* Biochim. Biophy. Acta, **1863**, 68–80
Satori, C.P., Henderson, M.M., Krautkramer, E.A., Kostal, V., Distefano, M.M. and Arriaga, E.A. (2013) *Bioanalysis of eukaryotic organelles* Chem. Rev., **113**, 2733−2811
Tan, D.J.L., Dvinge, H., Christoforou, A., Bertone, P., Arias, A.M. and Lilley, K.S. (2009) *Mapping organelle proteins and protein complexes in Drosophila melanogaster* J. Proteome Res., **8**, 2667–2678

Neuroligin 3

Wua, J., Tao, N., a, Tian, Y., Xing, G., Lv, H., Han, J., Lin, C. and Xie, W. (2018) *Proteolytic maturation of Drosophila Neuroligin 3 by tumor necrosis factor α-converting enzyme in the nervous system* BBA – Gen. Subjects, **1862**, 440–450

Nuclei

Groen, C.M., Jayo, A., Parsons, M. and Tootle, T.L. (2015) *Prostaglandins regulate nuclear localization of Fascin and its function in nucleolar architecture* Mol. Biol. Cell, **26**, 1901-1917
Steiner, F.A., Talbert, P.B., Kasinathan, S., Deal, R.B. and Henikoff, S. (2012) *Cell-type-specific nuclei purification from whole animals for genome-wide expression and chromatin profiling* Genome Res., **22**, 766–777
Steiner, F.A. and Henikoff, S. (2015) *Cell type-specific affinity purification of nuclei for chromatin profiling in whole animals* In The Nucleus, Methods in Mol. Biol. **1228** (ed. Hancock, R.) Springer Science+Business Media New York, pp 3-14
Ye, Y., Gu, L., Chen, X., Shi, J., Zhang, X. and Jiang, C. (2016) *Chromatin remodeling during the in vivo glial differentiation in early Drosophila embryos* Sci. Rep., **6**: 33422
Ye, Y., Li, M., Gu, L., Chen, X., Shi, J., Zhang, X. and Jiang, C. (2017) *Chromatin remodeling during in vivo neural stem cells differentiating to neurons in early Drosophila embryos* Cell Death Different., **24**, 409–420

Plasma membrane

Dasgupta, U., Bamba, T., Chiantia, S., Karim, P., Abou Tayoun, A.N., Yonamine, I., Rawat, S.S., Rao, R.P. et al (2009) *Ceramide kinase regulates phospholipase C and phosphatidylinositol 4, 5, bisphosphate in phototransduction* Proc. Natl. Acad. Sci. USA, **106**, 20063-20068
Rao, R.P., Yuan, C., Allegood, J.C., Rawat, S.S., Edwards, M.B., Wang, X., Merrill, A.H., Acharya, U. and Acharya, J.K. (2007) *Ceramide transfer protein function is essential for normal oxidative stress response and lifespan* Proc. Natl. Acad. Sci. USA, **104**, 11364-11369
Stowers, R.S., Megeath, L.J., Gorska-Andrzejak, J., Meinertzhagen, I.A. and Schwartz, T.L. (2002) *Axonal transport of mitochondria to synapses depends on Milton, a novel Drosophilia protein* Neuron, **36**, 1063-1077

Rhabdomere membranes

Panneels, V., Kock, I., Krijnse-Locker, J., Rezgaoui, M., Sinning, I. (2011) *Drosophila photoreceptor cells exploited for the production of eukaryotic membrane proteins: receptors, transporters and channels* PLoS One **6**: e18478

Toll pathway

Shmueli, A., Shalit, T., Okun, E. and Shohat-Ophir, G, (2018) *The Toll pathway in the central nervous system of flies and mammals* Neuromol. Med., **20**, 419–436

5-5 Insect larvae lipid rafts

Bayyareddy, K., Zhu, X., Orlando, R. and Adang, M.J. (2012) *Proteome analysis of Cry4Ba toxin-interacting Aedes aegypti lipid rafts using geLC-MS/MS* J. Proteome Res., **11**, 5843-5855

Ito, T., Bando, H. and Asano, S-i. (2006) *Activation process of the mosquitocidal δ-endotoxin Cry39A produced by Bacillus thuringiensis subsp. aizawai BUN1-14 and binding property to Anopheles stephensi* BBMV J. Invert. Pathol., **93**, 29-35

Liu, J-G., Yang, A-Z., Shen, X-H., Hua, B-G., Shi, G-L. (2011) *Specific binding of activated Vip3Aa10 to Helicoverpa armigera brush border membrane vesicles results in pore formation* J. Invertebr. Pathol., **108**, 92–97

5-6. Leech microglia

Arab, T., Raffo-Romero, A., Van Camp, C., Lemaire, Q., Le Marrec-Croq, F., Drago, F., Aboulouard, S., Slomianny, C., Lacoste, A-S. et al (2019) *Proteomic characterisation of leech microglia extracellular vesicles (EVs): comparison between differential ultracentrifugation and Optiprep™ density gradient isolation* J. Extracell. Ves., **8**: 1603048

5-7. *Rhodnius prolixus*

Yolk granules

Gomes, F.M., Oliveira, D.M.P., Motta, L.S., Ramos, I.B., Miranda, K.M. and Machado, E.A. (2010) *Inorganic polyphosphate inhibits an aspartic protease-like activity in the eggs of Rhodnius prolixus (Stahl) and impairs yolk mobilization in vitro* J. Cell. Physiol., **222**, 606–611

5-8. sf9 cells

Plasma membrane

Eisses, J.F., Chi, Y. and Kaplan, J.H. (2005) *Stable plasma membrane levels of hCTR1 mediate cellular copper uptake* J. Biol. Chem., **280**, 9635-9639

5-9. Spodoptera

Extracellular vesicles

Thoene, J., Goss, T., Witcher, M., Mullet, J., N'Kuli, F., Van Der Smissen, P., Courtoy, P. and Hahn, S.H. (2013) *In vitro correction of disorders of lysosomal transport by microvesicles derived from baculovirus-infected Spodoptera cells* Mol. Genet. Metab., **109**, 77–85

6. Marine invertebrates

6.1 Haloarcheons

Erdmann, S., Tschitschko, B., Zhong, L., Raftery, M.J. and Cavicchioli, R. (2017) *A plasmid from an Antarctic haloarchaeon uses specialized membrane vesicles to disseminate and infect plasmid-free cells* Nat. Microbiol., **1446**, 1446–1455

6-2 Molluscs

Mannosomes

Knigge, T., Mann, N., Parveen, Z., Perry, C., Gernhofer, M., Triebskorn, R., Kohler, H-R. and Connock, M. (2002) *Mannosomes: a molluscan intracellular tubular membrane system related to heavy metal stress* Comp. Biochem. Physiol. Part C, **131**, 259-269

Mitochondria, peroxisomes, lysosomes, microsomes

Apraiz, I., Mi, J. and Cristobal, S. (2006) *Identification of proteomic signatures of exposure to marine pollutants in mussels (Mytilus edulis)* Mol. Cell. Proteom., **5**, 1274-1285

Apraiz, I., Cajaraville, M.P. and Cristobal, S. (2009) *Peroxisomal proteomics: Biomonitoring in mussels after the Prestige's oil spill* Mar. Pollut. Bull., **58**, 1815–1826

Cristobal, S. (2007) *Proteomics-based method for risk assessment of peroxisome proliferating pollutants in the marine environment* Methods Mol. Biol., **410**, 123-135

Grewal, N., Parveen, Z., Large, A., Perry, C. and Connock, M. (2000) *Gastropod mollusc aliphatic alcohol oxidase: subcellular localisation and properties* Comp. Biochem. Biophys., **125**, 543-554

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Nuclei

Shaw, J.P., Large, A.T., Chipman, J.K., Livingstone, D.R. and Peters, L.D. (2000) *Seasonal variation in mussel Mytilus edulis digestive gland cytochrome P4501A- and 2E-immunoidentified protein levels and DNA strand breaks (Comet assay)* Marine Environ. Res., **50**, 405-409

Shaw, J.P., Large, A.T., Livingstone, D.R., Doyotte, A., Renger, J., Chipman, J.K. and Peters, L.D. (2002) *Elevation of cytochrome P450-immunopositive protein and DNA damage in mussels (Mytilus edulis) transplanted to a contaminated site* Marine Environ. Res., **54**, 505-509

Shaw, J.P., Large, A.T., Donkin, P., Evans, S.V., Staff, F.J., Livingstone, D.R., Chipman, J.K. and Peters, L.D. (2004) *Seasonal varation in cytochrome P450 immunopositive protein levels, lipid peroxidation and genetic toxicity in digestive gland of the mussel Mytilus edulis* Aquatic Tox., **67**, 325-336

6-3 Sea urchin eggs/sperm

Acidocalcisomes

Ramos, I.B., Miranda, K., Pace, D.A., Verbist, K.C., Lin, F-Y., Zhang, Y., Oldfield, E., Machado, E.A., de Souza, W. and Docampo, R. (2010) *Calcium- and polyphosphate-containing acidic granules of sea urchin eggs are similar to acidocalcisomes, but are not the targets for NAADP* Biochem. J., **429**, 485–495

Lipid rafts

Loza-Huerta, A., Vera-Estrella, R., Darszon, A. and Beltrána, C. (2013) *Certain Strongylocentrotus purpuratus sperm mitochondrial proteins co-purify with low density detergent-insoluble membranes and are PKA or PKC-substrates possibly involved in sperm motility regulation* Biochim. Biophys. Acta, **1830**, 5305–5315

Vacquier, V.D., Loza-Huerta, A., García-Rincón, J., Darszon, A. and Beltrán, C. (2014) S*oluble adenylyl cyclase of sea urchin spermatozoa* Biochim. Biophys. Acta, **1842**, 2621–2628

6-4 Squid

Axoplasmic vesicles

LaPointe, N.E., Morfini, G., Pigino, G., Gaisina, I.N., Kozikowski, A.P., Binder, L.I. and Brady, S.T. (2009) *The amino terminus of tau inhibits kinesin-dependent axonal transport: Implications for filament toxicity* J. Neurosci. Res., **87**, 440-451

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7. Nematodes, trematodes, flatworms, annelids

Extracellular vesicles

Eichenberger, R.M., Talukder, H., Field, M.A., Wangchuk, P., Giacomina, P., Loukas, A. and Sotillo, J. (2018) *Characterization of Trichuris muris secreted proteins and extracellular vesicles provides new insights into host–parasite communication* J. Extracell. Ves., **7**: 1428004

Meningher, T., Lerman, G., Regev-Rudzki, N., Gold, D., Ben-Dov, I.Z., Sidi, Y., Avni, D. and Schwartz, E. (2017) *Schistosomal microRNAs isolated from extracellular vesicles in sera of infected patients: a new tool for diagnosis and follow-up of human schistosomiasis* J. Infect. Dis., **215**, 378–86

Sotillo, J., Pearson, M., Potriquet, J., Becker, L., Pickering, D., Mulvenna, J. and Loukas, A. (2016) *Extracellular vesicles secreted by Schistosoma mansoni contain proteinvaccine candidates* Int. J. Parasitol., **46**, 1–5

Lysosomes

Li, Y., Chen, B., Zou, W., Wang, X., Wu, Y., Zhao, D., Sun, Y., Liu, Y., Chen, L., Miao, L, Yang, C. and Wang, X. (2016) *The lysosomal membrane protein SCAV-3 maintains lysosome integrity and adult longevity* J. Cell Biol., **215,** 167–185

Mitochondria

Haynes, C.M., Yang, Y., Blais, S.P., Neubert, T.A. and Ron, D. (2010) *The matrix peptide exporter HAF-1 signals a mitochondrial UPR by activating the transcription factor ZC376.7 in C. elegans* Mol. Cell, **37**, 529–540

Nuclei

Steiner, F.A., Talbert, P.B., Kasinathan, S., Deal, R.B. and Henikoff, S. (2012) *Cell-type-specific nuclei purification from whole animals for genome-wide expression and chromatin profiling* Genome Res., **22**, 766–777

Steiner, F.A. and Henikoff, S. (2015) *Cell type-specific afinity purification of nuclei for chromatin profiling in whole animals* In The Nucleus, Methods in Mol. Biol. **1228** (ed. Hancock, R.) Springer Science+Business Media New York, pp 3-14
Tweetena, K.A. and Morris, S.J. (2016) *Flow cytometry analysis of DNA ploidy levels and protein profiles distinguish between populations of Lumbriculus (Annelida: Clitellata)* Invert. Biol., **135**, 385–399

Multivesicular bodies

Kobuna, H., Inoue, T., Shibata, M., Gengyo-Ando, K., Yamamoto, A., Mitani, S. and Arai, H. (2010) *Multivesicular body formation requires OSBP–related proteins and cholesterol* PloS Genet., **6**: e1001055

8. Phytoplankton (*Emiliania huxleyi)*

Lipid rafts

Rose, S.L., Fulton, J.M., Brown, C.M., Natale, F., Van Mooy, B.A.S. and Bidle, K.D. (2014) *Isolation and characterization of lipid rafts in Emiliania huxleyi: a role for membrane microdomains in host–virus interactions* Environ. Microbiol., **16**, 1150–1166

9. Plants, plant cells, trees

9-1. *Arabidopsis*

Chloroplasts

Laganowsky, A., Gómez, S.M., Whitelegge, J.P., Nishio, J.N. (2009) *Hydroponics on a chip: Analysis of the Fe deficient Arabidopsis thylakoid membrane proteome* J. Proteom., **72**, 397-415
Zheng, Y., Liao, C., Zhao, S., Wang, C. and Guo, Y. (2017) *The glycosyltransferase QUA1 regulates chloroplast-associated calcium signaling during salt and drought stress in Arabidopsis* Plant Cell Physiol., **58**, 329–341

Cytoplasm

Liu, Z., Zhu, Y., Gao, J., Yu, F., Dong, A. and Shen, W-H. (2009) *Molecular and reverse genetic characterization of nucleosome assembly protein1 (NAP1) genes unravels their function in transcription and nucleotide excision repair in Arabidopsis thaliana* Plant J., **59**, 27–38

ER and Golgi

Busse-Wicher, M., Gomes, T.C.F., Tryfona, T., Nikolovski, N., Stott, K., Grantham, N.J., Bolam, D.N., Skaf, M.S. and Dupree, P. (2014) *The pattern of xylan acetylation suggests xylan may interact with cellulose microfibrils as a twofold helical screw in the secondary plant cell wall of Arabidopsis thaliana* Plant J., **79**, 492–506
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Zheng, Y., Liao, C., Zhao, S., Wang, C. and Guo, Y. (2017) *The glycosyltransferase QUA1 regulates chloroplast-associated calcium signaling during salt and drought stress in Arabidopsis* Plant Cell Physiol., **58**, 329–341

ER, Golgi, plasma membrane, mitochondria, vacuolar membrane

Dunkley, T.P.J., Hester, S., Shadforth, I.P., Runions, J., Weimer, T., Hanton, S.L., Griffin, J.L., Besssant, C., Brandizzi, F. et al (2006) *Mapping the Arabidopsis organelle proteome* Proc. Natl. Acad. Sci. USA, **103**, 6518-6523
Gatto, L., Breckels, L.M., Burger, T., Nightingale, D.J.H., Groen, A.J., Campbell, C., Nikolovski, N., Mulvey, C.M., Christoforou, A., Ferro, M. and Lilley, K.S. (2014) *A foundation for reliable spatial proteomics data analysis* Mol. Cell. Proteom., **13**, 1937-1952
Groen, A.J., de Vries, S.C. and Lilley, K.S. (2008) *A proteomics approach to membrane trafficking* Plant Physiol., **147**, 1584-1589
Lilley, K.S. and Dunkley, T.P.J. (2008) *Determination of genuine residents of plant endomembrane organelles using isotope tagging and multivariate statistics* In Methods Mol. Biol., **432**, Organelle Proteomics (ed. Pflieger, D, and Rossier, J.) Humana Press, Totowa, NJ, pp 373-387
Nikolovski, N., Shliaha, P.V., Gatto, L., Dupree, P. and Lilley, K.S. (2014) *Label-free protein quantification for plant Golgi protein localization and abundance* Plant Physiol., **166**, 1033–1043
Sadowski, P.G., Dunkley, T.P.J., Shadforth, I.P., Dupree, P., Bessant, J.L. and Lilley, K.S. (2006) *Quantitative proteomic approach to study subcellular localization of membrane proteins* Nat. Protoc., **1**, 1778-1789

Zhang, Y., Nikolovski, N., Sorieul, M., Vellosillo, T., McFarlane, H.E., Dupree, R., Kesten, C., Schneider, R. et al (2016) *Golgi-localized STELLO proteins regulate the assembly and trafficking of cellulose synthase complexes in Arabidopsis* Nat. Comm., **7**: 11656

Extracellular vesicles

Hou, Y., Zhai, Y., Feng, L., Karimi, H.Z., Rutter, B.D., Zeng, L., Choi, D.S., Zhang, B., Gu, W. et al (2019) *A Phytophthora effector suppresses trans-kingdom RNAi to promote disease susceptibility* Cell Host Microbe **25**, 153–165

Rutter, B.D. and Innes, R.W. (2017) *Extracellular vesicles isolated from the leaf apoplast carry stress-response proteins* Plant Physiol., **173**, 728–741

Membrane vesicles, separation from proteins

Mahon, P. and Dupree, P. (2001) *Quantitative and reproducible two-dimensional gel analysis using Phoretix 2D Full* Electrophoresis, **22**, 2075-2085

Mitochondria

Breckels, L.M., Gatto, L., Christoforou, A., Groen, A.J., Lilley, K.S. and Trotter, M.W.B. (2013) *The effect of organelle discovery upon sub-cellular protein localization* J. Proteom., **88**, 129-140

Hartman, N.T., Sicilia, F., Lilley, K.S. and Dupree, P. (2007) *Proteomic complex detection using sedimentation* Anal. Chem., **79**, 2078-2083

Mitochondria, rough ER, plastid membranes

Berg, M., Parbel, A., Pettersen, H., Fenyo, D. and Björkesten, L. (2006) *Reproducibility of LC-MS-based protein identification* J. Exp. Botany, **57**, 1509-1514

Nuclei

Liu, Z., Zhu, Y., Gao, J., Yu, F., Dong, A. and Shen, W-H. (2009) *Molecular and reverse genetic characterization of nucleosome assembly protein1 (NAP1) genes unravels their function in transcription and nucleotide excision repair in Arabidopsis thaliana* Plant J., **59**, 27–38

Liu, Z., Zhu, Y., Gao, J., Yu, F., Dong, A. and Shen, W-H. (2009) *Molecular and reverse genetic characterization of nucleosome assembly protein1 (NAP1) genes unravels their function in transcription and nucleotide excision repair in Arabidopsis thaliana* Plant J., **59**, 27–38

Oil bodies

Deruyffelaere, C., Bouchez, I., Morin, H., Guillot, A., Miquel, M., Froissard, M., Chardot, T., and D'Andrea, S. (2015) *Ubiquitin-mediated proteasomal degradation of oleosins is involved in oil body mobilization during post-germinative seedling growth in Arabidopsis* Plant Cell Physiol., **56**, 1374–1387

Peroxisomes

Palma, J.M., Corpas, F.J. and del Rio, L.A. (2009) *Proteome of plant peroxisomes: new perspectives on the role of these organelles in cell biology* Proteomics, **9**, 2301-2312

Reumann, S. (2011) *Toward a definition of the complete proteome of plant peroxisomes: Where experimental proteomics must be complemented by bioinformatics* Proteomics **11**, 1764–1779

Plasma membrane

Alexandersson, E., Gustavsson, N., Bernfur, K., Kjellbom, P. and Larsson, C. (2007) *Plasma membrane proteomics* In Plant Proteomics (ed. Samaj, J. and Thelen, J.) Springer Science + Business Media, Berlin, pp 186-206

Subcellular membrane markers

Hooper, C.M., Stevens, T.J., Saukkonen, A., Castleden, I.R., Singh, P., Mann, G.W., Fabre, B., Jun Ito, J. et al (2017) *Multiple marker abundance profiling: combining selected reaction monitoring and data-dependent acquisition for rapid estimation of organelle abundance in subcellular samples* Plant J., **92**, 1202–1217

9-2. Ferns

Tonoplast

Shen, H., He, Z., Yan, H., Xing, Z., Chen, Y., Xu, W., Xu, W. and Ma, M. (2014) T*he fronds tonoplast quantitative proteomic analysis in arsenic hyperaccumulator Pteris vittata* L. J. Proteom., **105**, 46–57

9-3. Fruit

Tomato ripening

Pontiggia, D., Spinelli, F., Fabbri, C., Licursi, V., Negri, R., De Lorenzo, G. and Mattei, B. (2019) *Changes in the microsomal proteome of tomato fruit during ripening* Sci. Rep., **9**: 14350

Tonoplast

Liu, R., Wang, Y., Qin, G. and Tian, S. (2016) *iTRAQ-based quantitative proteomic analysis reveals the role of the tonoplast in fruit senescence* J. Proteom., **146**, 80–89

9-4. Ginger

Li, Z., Wang, H., Yin, H., Bennett, C., Zhang, H-g. and Guo, P. (2018) *Arrowtail RNA for ligand display on ginger exosome-like nanovesicles to systemic deliver siRNA for cancer suppression* Sci. Rep., **8**: 14644

9-5. Grasses, grains and related crops

Golgi/microsomes

Chateigner-Boutin, A-L., Suliman, M., Bouchet, B., Alvarado, C., Lollier, V., Rogniaux, H., Guillon, F. and Larré, C. (2015) *Endomembrane proteomics reveals putative enzymes involved in cell wall metabolism in wheat grain outer layers* J. Exp. Botany, **66**, 2649–2658

Suliman, M., Chateigner-Boutin, A-L., Francin-Allami, M., Partier, A., Bouchet, B., Salse, J., Pont, C., Marion, J., Rogniaux, H., Tessier, D., Guillon, F. and Larréa, C. (2013) *Identification of glycosyltransferases involved in cell wall synthesis of wheat endosperm* J. Proteom., **78**, 508–521

Lipid rafts

Carmona-Salazar, L., El Hafidi, M., Gutierrez-Najera, N., Noyola-Martinez, L., Gonzalez-Solis, A. and Gavilanes-Ruiz, M. (2015) *Fatty acid profiles from the plasma membrane and detergent resistant membranes of two plant species* Phytochemistry, **109**, 25–35

Han, B., Yang, N., Pu, H. and Wang, T. (2018) *Quantitative proteomics and cytology of rice pollen sterol-rich membrane domains reveals pre-established cell polarity cues in mature pollen* J. Proteome Res., **17**, 1532−1546

Nagano, M., Ishikawa, T., Fujiwara, M./, Fukao, Y., Kawano, Y. Kawai-Yamada, M. and Shimamoto, K. (2016) *Plasma membrane microdomains are essential for Rac1-RbohB/H-mediated immunity in rice* Plant Cell, **28**, 1966–1983

Nuclei

Bedell, J.A., Budiman, M.A., Nunberg, A., Citek, R.W., Robbins, D., Jones, J., Flick, E., Rohlfing, T., Fries, J. et al (2005) *Sorghum genome sequencing by methylation filtration* PLoS Biol **3**: e13

Ford, T.C., Baldwin, J.P. and Lambert, S.J. (1998) *Rapid enzyme-free preparation of starch-free nuclei from plants facilitates studies of chromatin structure. Plant proteins in abiotic stress responses* Plant Protein Club, 1998 Annual Symposium, University of York, p24

Plasma membrane

Nagano, M., Ishikawa, T., Fujiwara, M./, Fukao, Y., Kawano, Y. Kawai-Yamada, M. and Shimamoto, K. (2016) *Plasma membrane microdomains are essential for Rac1-RbohB/H-mediated immunity in rice* Plant Cell, **28**, 1966–1983

Protein bodies

Llop-Tous, I., Madurga, S., Giralt, E., Marzabal, P., Torrent, M. and Ludevid, M.D. (2010) *Relevant elements of a maize γ-zein domain involved in protein body biogenesis* J. Biol. Chem., **285**, 35633–35644

9-6. Legumes

Nuclei

Timko, M.P., Rushton, P.J., Laudeman, T.W., Bokowiec, M.T., Chipumuro, E., Cheung, F., Town, C.D. and Chen, X. (2008) *Sequencing and analysis of the gene-rich space of cowpea* BMC Genomics, **9:** 103

Lipid rafts

Belugin, B.V., Zhestkova, I.M. and Trofimova, M.S. (2011) *Affinity of PIP-aquaporins to sterol-enriched domains in plasma membrane of the cells of etiolated pea seedlings* Biochemistry (Moscow) Suppl. Series A: Membr. Cell Biol., **5**, 56–63

Carmona-Salazar, L., El Hafidi, M., Enríquez-Arredondo, C., Vázquez-Vázquez, C., González de la Vara, L.E. and Gavilanes-Ruíz, M. (2011) *Isolation of detergent-resistant membranes from plant photosynthetic and non-photosynthetic tissues* Anal. Biochem., **417**, 220–227

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Microsomal/plasma membranes

Belugin, B.V., Zhestkova, I.M., Piotrovskii, M.S., Lapshin, N.K. and Trofimova, M.S. (2017) *PIP1 aquaporins, sterols, and osmotic water permeability of plasma membranes from etiolated pea seedlings* Biochemistry (Moscow), Suppl. Ser. A: Membrane and Cell Biol., **11**, 168–176

Peroxisomes

Arai, Y., Hayashi, M. and Nishimura, M. (2008) *Proteomic analysis of highly purified peroxisomes from etiolated Soybean cotyledons* Plant Cell Physiol., **49**, 526-539
Hossain, Z. and Komatsu, S. (2014) *Soybean proteomics* In Plant Proteomics: Methods Mol. Biol., **1072** (ed. Jorrin-Novo, J.V. et al), Springer Science+Business Media, LLC, pp 315-331
Komatsu, S. and Ahsan, N. (2009) *Soybean proteomics and its application to functional analysis* J. Proteom., **72**, 325-336

9-7. *Nicotiana benthamiana*

Endoplasmic reticulum

Joseph, M., Ludevid, D., Torrent, M., Rofidal, V., Tauzin, M., Rossignol, M. and Peltier, J-B. (2012) *Proteomic characterisation of endoplasmic reticulum-derived protein bodies in tobacco leaves* BMC Plant Biol., **12**: 36

9-8. *Nicotiana tabacum*

ER/Golgi/plasma membrane/tonoplast

Hagiwara, Y., Komoda, K., Yamanaka, T., Tamai, A., Meshi, T., Funada, R., Tsuchiya, T., Naito, S and Ishikawa, M. (2003) *Subcellular localization of host and viral proteins associated with tobamovirus RNA replication* EMBO J., **22**, 344-353
Potocký, M., Pejchar, P., Gutkowska, M., Jiménez-Quesada, M.J., Potocká, A., de Dios Alchéc, J., Kost, B. and Žárský, V. (2012) *NADPH oxidase activity in pollen tubes is affected by calcium ions, signaling phospholipids and Rac/Rop GTPases* J. Plant Physiol., **169**, 1654– 1663

Lipid rafts

Carmona-Salazar, L., El Hafidi, M., Enríquez-Arredondo, C., Vázquez-Vázquez, C., González de la Vara, L.E. and Gavilanes-Ruíz, M. (2011) *Isolation of detergent-resistant membranes from plant photosynthetic and non-photosynthetic tissues* Anal. Biochem., **417**, 220–227
Moscatelli, A., Gagliardi, A., Maneta-Peyret, L., Bini, L., Stroppa, N., Onelli, E., Landi, C., Scali, M., Idilli, A.I. and Moreau, P. (2015) *Characterisation of detergent-insoluble membranes in pollen tubes of Nicotiana tabacum (L.)* Biol. Open **4**, 378–399

Membrane/cytosol fractionation

Hagiwara-Komoda, Y., Hirai, K., Mochizuki, A., Nishiguchi, M., Meshi, T. and Ishikawa, M. (2008) *Overexpression of a host factor TOM1 inhibits tomato mosaic virus propagation and suppression of RNA silencing* Virology, **376**, 132-139

Nuclei

Dahan, J., Pichereaux, C., Rossignol, M., Blanc, S., Wendehenne, D., Pugin, A. and Bourque, S. (2009) *Activation of a nuclear-localized SIPK in tobacco cells challenged by cryptogein, an elicitor of plant defence reactions* Biochem. J., **418**, 191–200
Lannoo, N., Peumans, W.J., Van Pamel, E., Alvarez, R., Xiong, T-C., Hause, G., Mazars, C. and Van Damme, E.J.M. (2006) *Localization and in vitro binding studies suggest that the cytoplasmic/nuclear tobacco lectin can interact in situ with high-mannose and complex N-glyc* FEBS Lett., **580**, 6329-6337
Mazars, C., Bourque, S., Mithöfer, A., Pugin, A. and Ranjeva, R. (2009) *Calcium homeostasis in plant cell nuclei* New Phytologist, **181**, 261-274
Schouppe, D., Ghesquière, B., Menschaert, G., De Vos, W.H., Bourque, S., Trooskens, G., Proost, P., Gevaert, K. and Van Damme, E.J.M. (2011) *Interaction of the tobacco lectin with histone proteins* Plant Physiol., **155**, 1091–1102
Testard, A., Da Silva, D., Ormancey, M., Pichereaux, C., Pouzet, C., Jauneau, A., Grat, S., Robe, E., Brière, C., Cotelle, V., Mazars, C. and Thuleau, P. (2016) *Calcium- and nitric oxide-dependent nuclear accumulation of*

cytosolic glyceraldehyde-3-phosphate dehydrogenase in response to long chain bases in tobacco BY-2 cells Plant Cell. Physiol., **57,** 2221–2231
Xiong, T.C., Jauneau, A., Ranjeva, R. and Mazars, C. (2004) *Isolated plant nuclei as mechanical and thermal sensors involved in calcium signaling* Plant J., **40**, 12-21

Protein bodies
Llop-Tous, I., Madurga, S., Giralt, E., Marzabal, P., Torrent, M. and Ludevid, M.D. (2010) *Relevant elements of a maize γ-zein domain involved in protein body biogenesis* J. Biol. Chem., **285**, 35633–35644

9-9. *Picea meyeri* (pollen tubes)
Lipid rafts
Liu, P., Li, R-L., Zhang, L., Wang, Q-L., Niehaus, K., Baluška, F., Šamaj, J. and Lin, J-X. (2009) *Lipid microdomain polarization is required for NADPH oxidase-dependent ROS signaling in Picea meyeri pollen tube tip growth* Plant J., **60**, 303–313

9-10. *Suaeda altissima*
Golgi
Shuvalov, A.V., Orlova, J.V., Khalilova, L.A., Myasoedov, N.A., Andreev, I.M., Belyaev, D.V. and Balnokin, Y.V. (2015) *Evidence for the functioning of a Cl^-/H^+ antiporter in the membranes isolated from root cells of the halophyte Suaeda altissima and enriched with Golgi membranes* Russ. J. Plant Physiol., **62**, 45–56

10. Protozoa
10-1. Apicomplexia protozoa (*Eimeria tenella)*
Refractile body
De Venevelles, P., Chich, J.F., Faigle, W., Lombard, B., Loew, D., Péry, P. and M. Labbé (2006) *Study of proteins associated with the Eimeria tenella refractile body by a proteomic approach* Int. J. Parasitol., **36**, 1399-1407

10-2. Dictyostelium
Acidocalcisomes, contractile vacuoles and mitochondria
Marchesini, N., Ruiz, F.A., Vieira, M. and Docampo, R. (2002) *Acidocalcisomes are functionally linked to the contractile vacuole of Dictyostelium discoideum* J. Biol. Chem., **277**, 8146-8153

G-proteins
Alamer, S., Kageyama, Y. and Gundersen, R.E. (2018) *Localization of palmitoylated and activated G protein α-subunit in Dictyostelium discoideum* J Cell Biochem., **119**, 4975–4989

Phagosomes
Shevchuk, O., Batzilla, C., Hägele, S., Kusch, H., Engelmann, S., Hecker, M., Haas, A., Heuner, K., Glöckner, G., Steinert, M. (2009) *Proteomic analysis of Legionella-containing phagosomes isolated from Dictyostelium* Int. J. Med. Microbiol., **299**, 489–508

Secretory vesicles (CoA binding protein)
Cabral, M., Anjard, C., Malhotra, V., Loomis, W.F. and Kuspa, A. (2010) *Unconventional secretion of AcbA in Dictyostelium discoideum through a vesicular intermediate* Eukaryot. Cell, **9**, 1009-1017

Vacuoles (pathogen-containing)
Shevchuk, O. and Steinert, M. (2013) *Isolation of pathogen-containing vacuoles* In *Dictyostelium discoideum* Protocols, Methods Mol. Biol., **983**, (eds Eichinger, L. and Rivero, F.) Springer Science+Business Media, pp 419-429

10-3. *Giardia*
Lipid rafts
De Chatterjee, A., Mendez, T.L., Roychowdhury, S. and Dasa, S. (2015) *The assembly of GM1 glycolipid- and cholesterol-enriched raft-like membrane microdomains is important for Giardial encystation* Infect. Immun. **83**, 2030-2042

Mitochondria

Jedelský, P.L., Doležal, P., Rada, P., Pyrih, J., Šmíd, O., Hrdý, I., Šedinová, M., Marcinčiková, M. et al (2011) *The minimal proteome in the reduced mitochondrion of the parasitic protist Giardia intestinalis* PLoS One, **6**: e17285

10-4. Leishmania

Acidocalcisomes

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