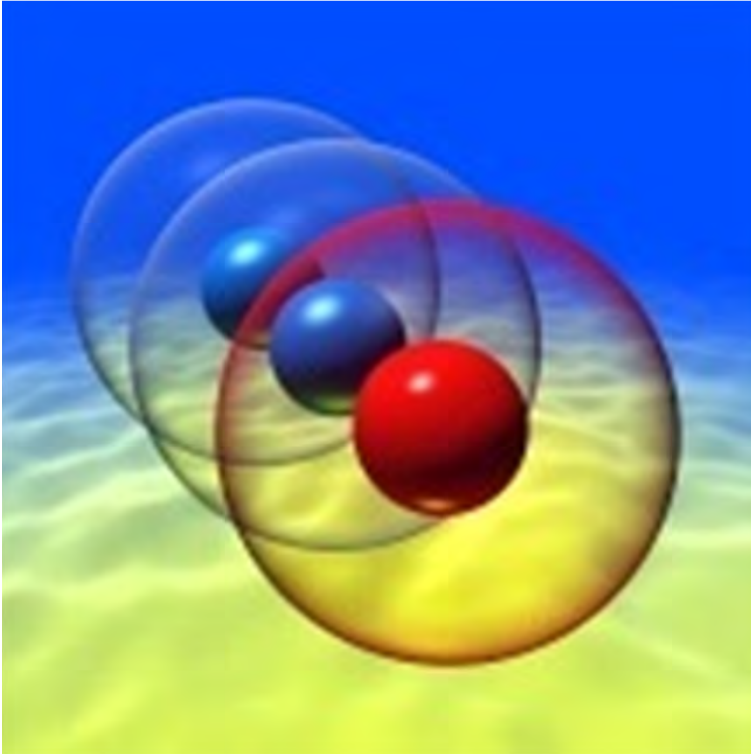


NanoMedicine Through the EU-North American Lens: Biomaterials Researchers Weave a Forceful Fabric



Illimar Altosaar - University of Ottawa
altosaar@uottawa.ca

Embassy of Austria, Washington DC 12.7.2018



LIQD-CORNEA

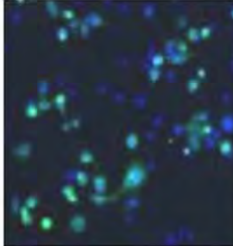


The problem
Corneal ulcers or perforations, e.g., from severe HSV infections

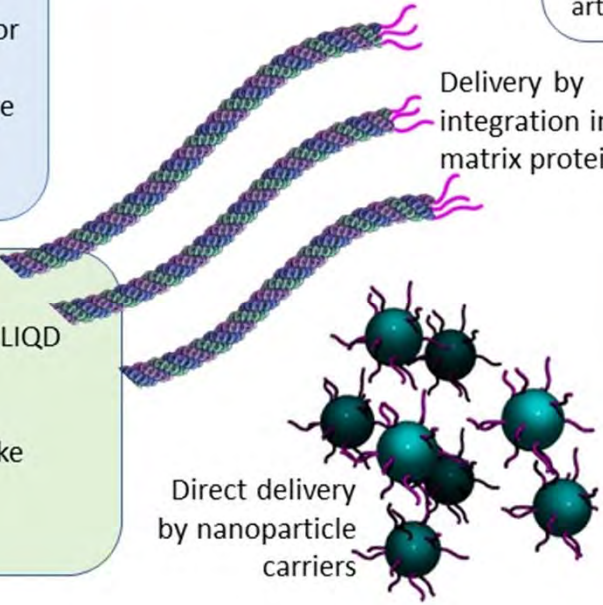
The solution
Antiviral peptides integrated into the LIQD CORNEA formulation...

- Expressed by transgenic cells
- As part of the artificial collagen-like matrix proteins
- Delivered by nanoparticles

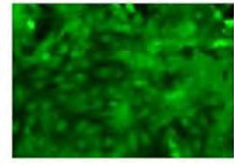
Delivery of antiviral peptides



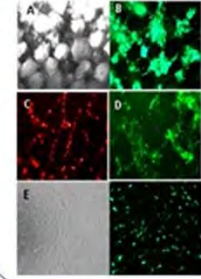
Produced by therapeutic cells (in vivo transfected with DNA delivering nanoparticles)



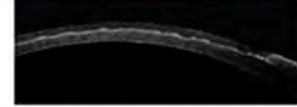
Pilot experiments



Human corneal epithelial cells on artificial collagen gel



Cells growing in collagen hydrogels transfected with fluorescent DNA/RNA by 3D-FectIN



Top: Pig cornea with Liquid Cornea
Bottom: OCT image of pig eye with liquid cornea


 Université de Montréal
 Hôpital Maisonneuve-Rosemont
 Centre affilié à l'Université de Montréal

 Eesti Maaülikool
 Estonian University of Life Sciences

 OZ BIOSCIENCES

 VILNIAUS UNIVERSITETAS
 1579
 UNIVERSITAS VILNENSIS



IP – Where have the Indian Desi Jeans travelled to?



Ludwig Knoop

Estonia's Rockefeller,

Kreenholm Founder

Europe's cotton empire

1821 - 1894



1857 Narva Kreenholm Cotton Products Mill

Built in 18 months!

300 trained workers from Germany,
experts from England trained locals

1860 2000 people employed

1872 4600 workers

1894 5300

1911 **10 000 workers.**

Largest business in Czarist Russia



Kreenholm Cotton Mills, Narva, Estonia





Dominion Cotton Mills, Magog, Canada





Ruth Leuwerik

IN DEM FARBFILM

Die Trapp-Familie

Nach dem Lebensroman von
Baroness Maria Trapp
„Fünf Klöster zum Wohlfühl“

Mit Georg Haderik - Maria - Werner Kren

Mit Peter Göttsche - Dr. Robert Weiß

Regie Wolfgang Lieber

Produktion Utz Uermann

Hans Holt · Maria Holst
Josef Meinrad · Friedr. Domin
Hilde von Stolz

Regie Wolfgang Lieber

Ein Wolfgang Reinhardt-Produktion des DDFK-Film in Berlin-Gloria



Maria von Trapp

**Salzburg >
Morrisville,
Vermont.**

**> only 66 km
to Newport
VT**

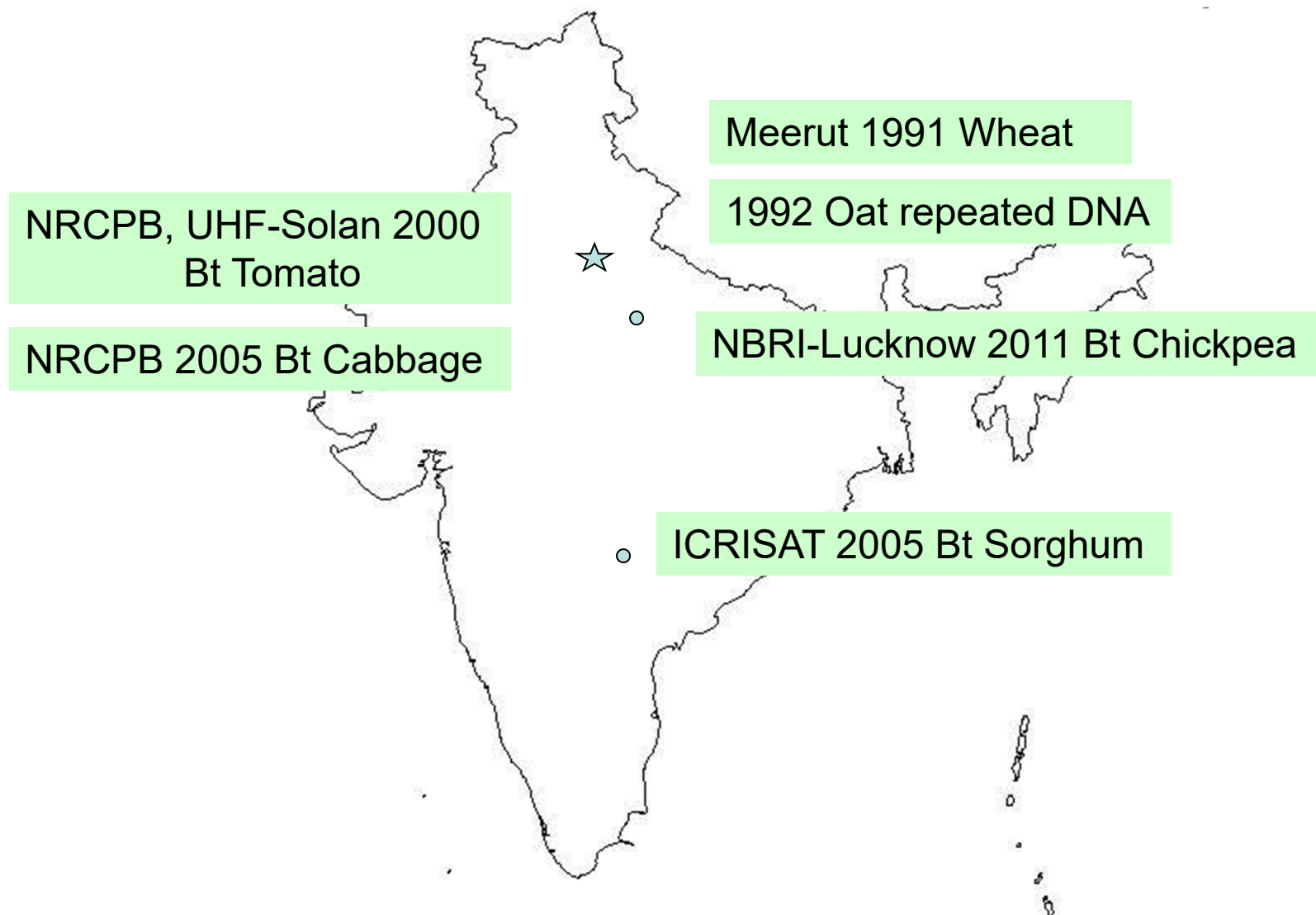
= Magog, Que.

Cotton Mills, Cornwall, Ontario, Canada

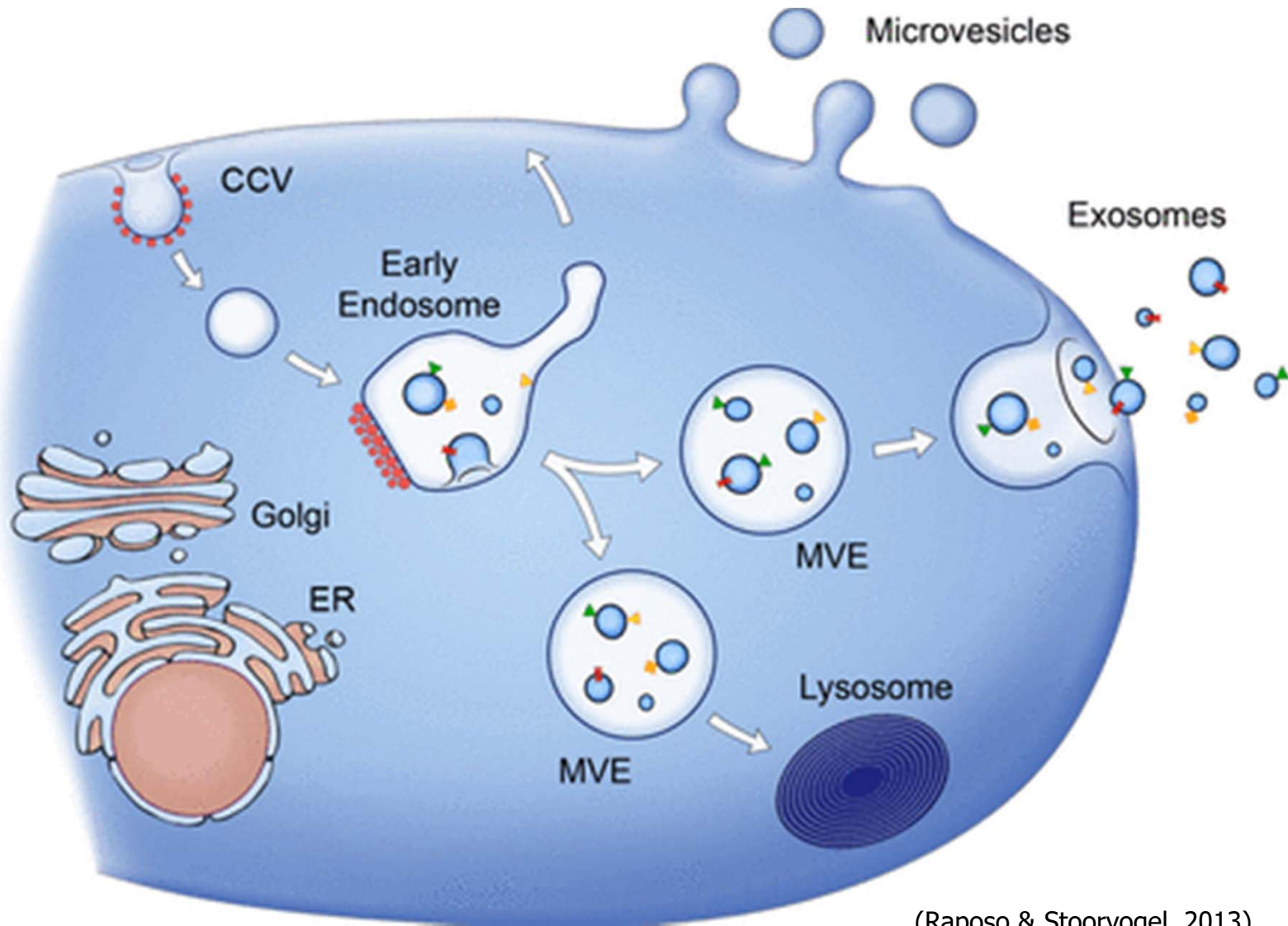


Cotton Mills and Locks, Cornwall, Ontario.—32.

University of Ottawa Biotech Collaborations in India (ISI Journal Articles)

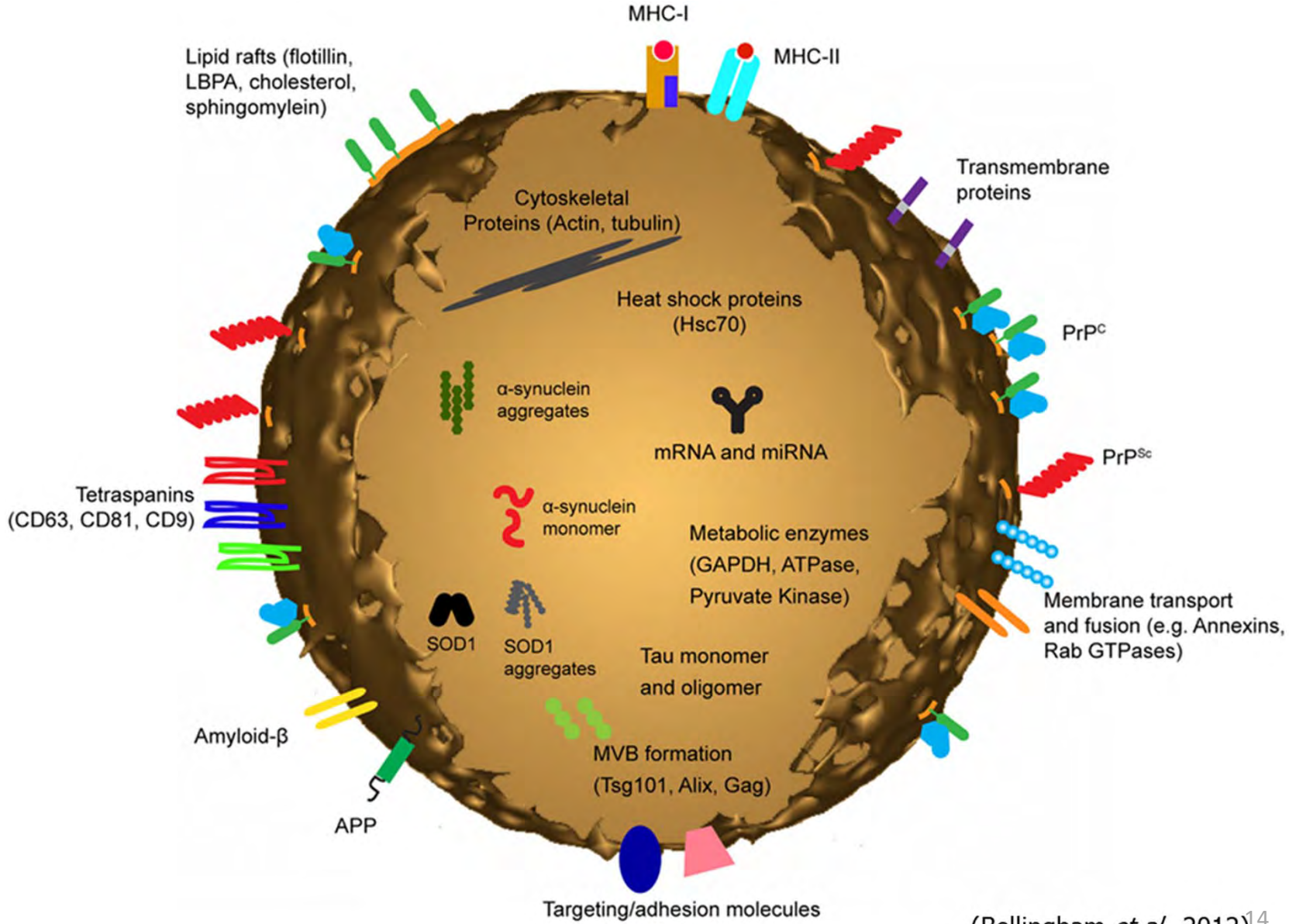


Exosome biogenesis



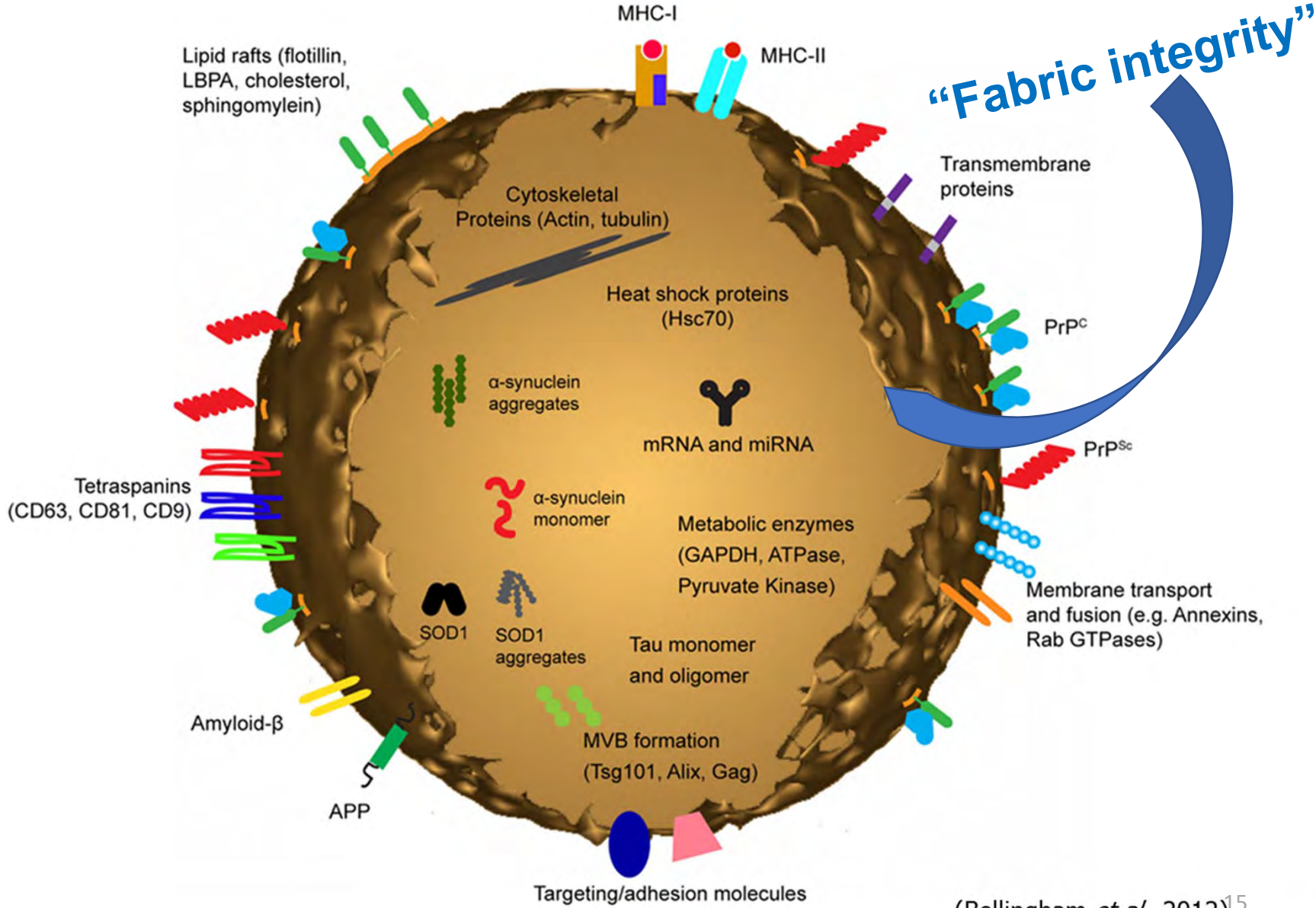
(Raposo & Stoorvogel, 2013)

Exosome – information in motion



(Bellingham *et al.*, 2012)¹⁴

Exosome – information in motion



(Bellingham *et al.*, 2012)¹⁵

LIQD-CORNEA



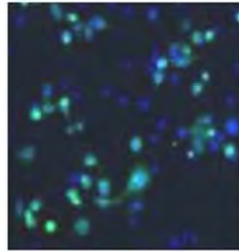
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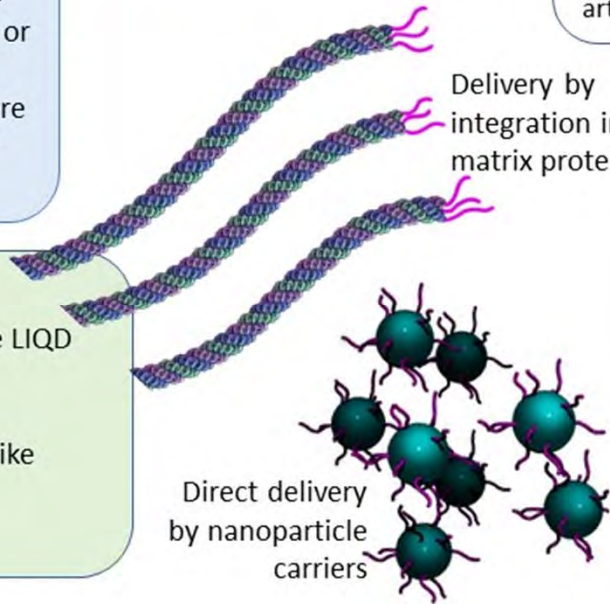
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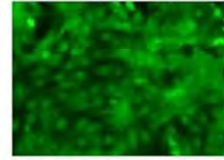
Delivery of antiviral peptides



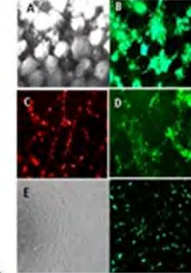
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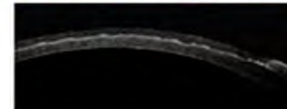
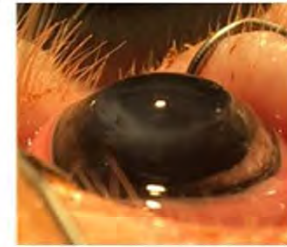
Pilot experiments



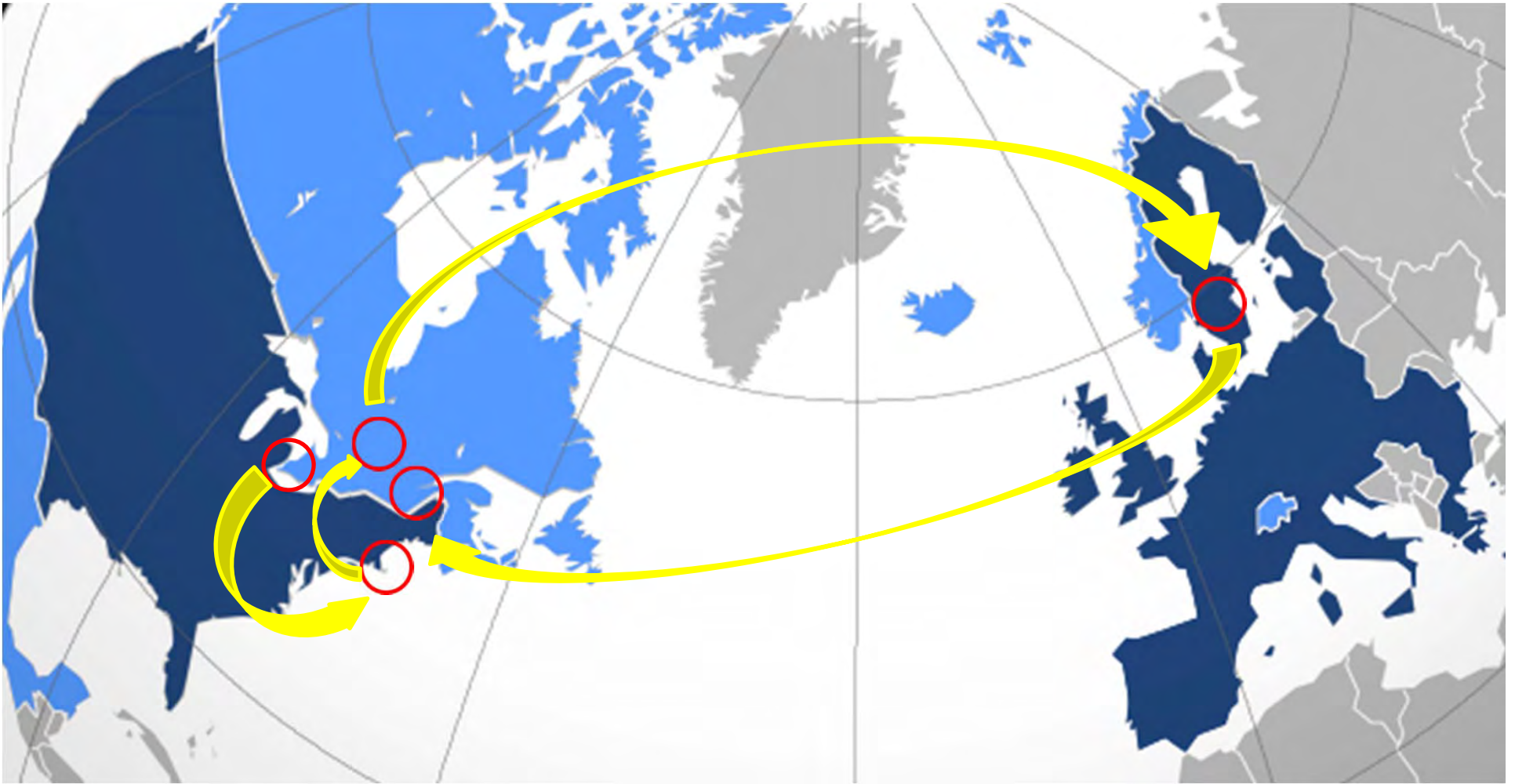
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Bottom: OCT image of pig eye with liquid cornea



Toronto > Boston > Ottawa > Linköping > Montreal



Pärnu > Tartu EE > Ottawa > Tours FR > Tallinn EE > Tartu



Montreal > Ottawa > Paris > Ottawa > Tartu EE > Ottawa > Linkoping SE

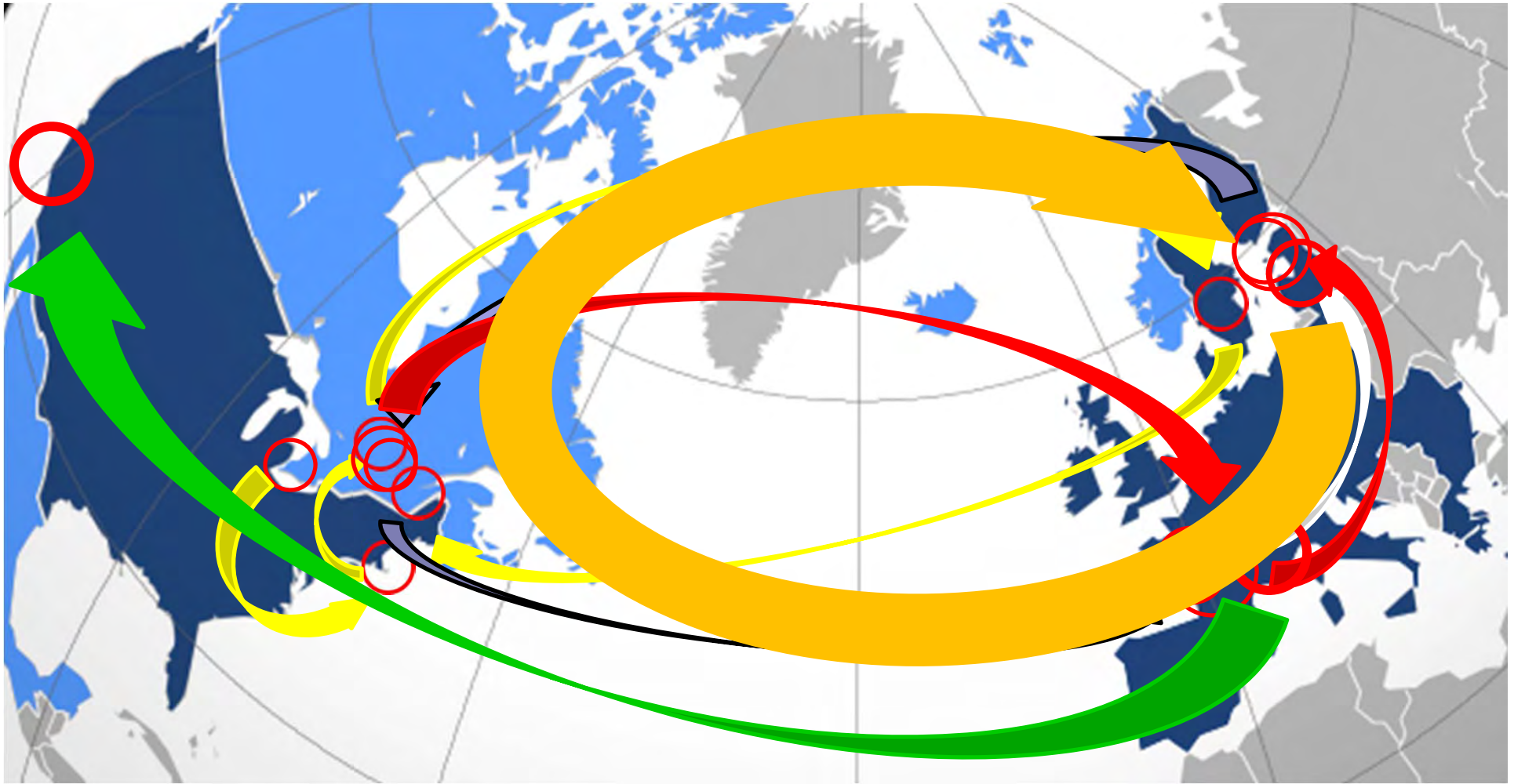


Marseilles > San Diego > Marseilles



Vilnius LT











Stationary Researchers – a 'still' – *in situ*



Flow Cytometry

Dr Vera Tang
Prof Marc-A Langlois
Dr. Emanuela Ferretti

Camille Le Gall, Jamie Kraft, Andrea Zukowski
Peter Lee, Grayson Hatfield, Silva Wolters, Mohsin Zaidi
(Linda Mardiros, Jordan Demone, Maryam Nourimand, Trevor Greenham)