
Ichilov
Scientific
Ecosystem

TEL AVIV SOURASKY
MEDICAL CENTER
ICHILOV

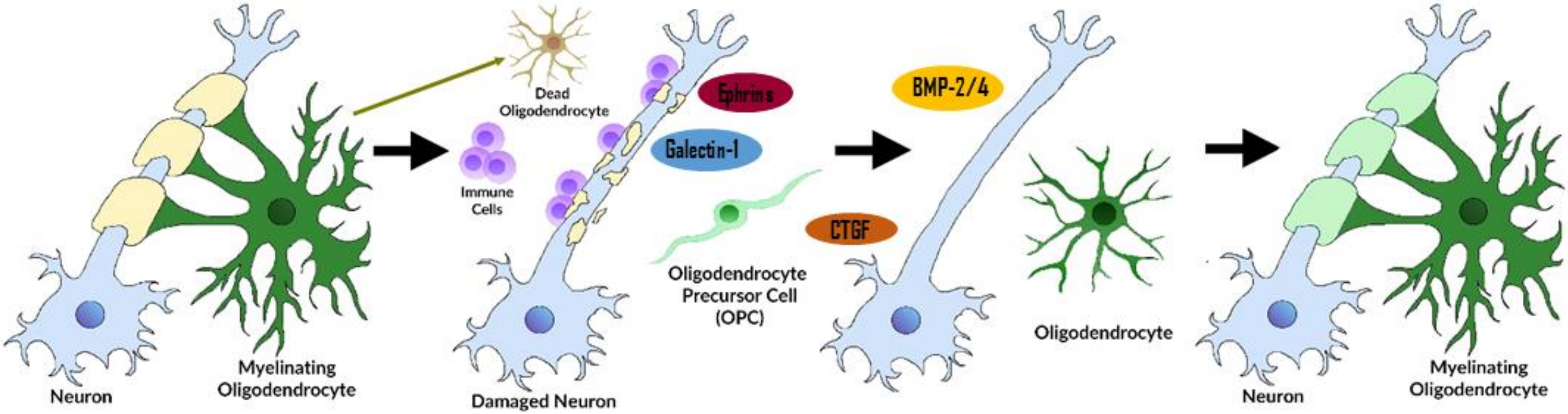
Laboratory of Neuroimmunology

Who we are and our area of interest

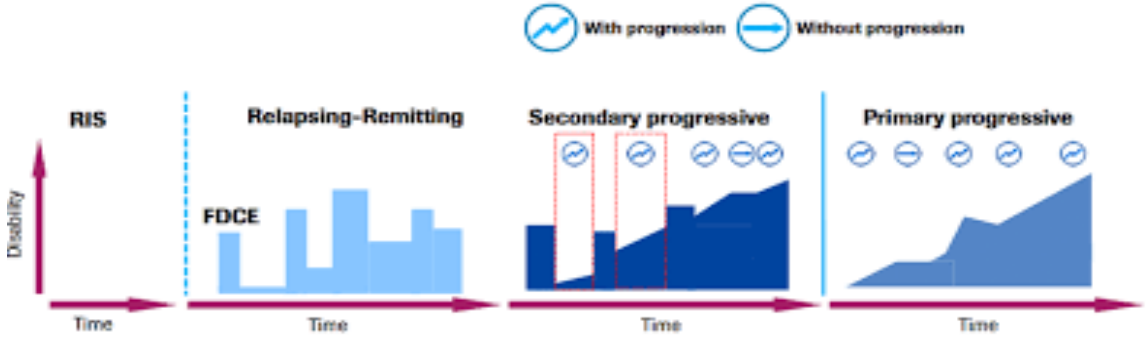
Name of lab/Location	PI/Manager
• Neuroimmunology Research Lab Rishonim building, 5th floor, room 62	• PI: Prof. Arnon Karni • Manager: Dr. Maya Golan

Who we are and our area of interest

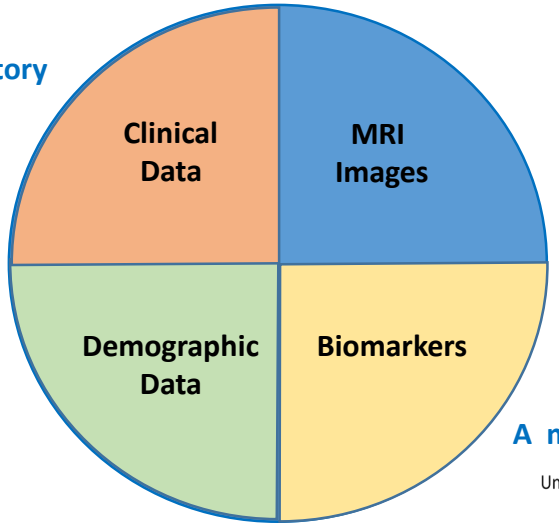
Demyelination and Remyelination in Multiple Sclerosis (MS)



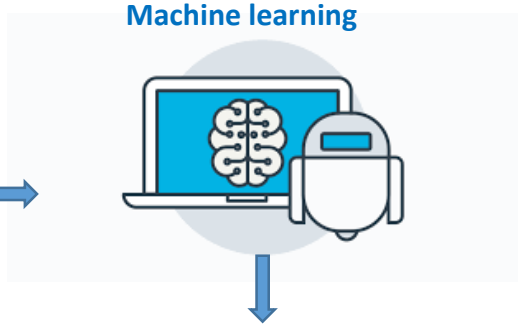
Developing a prognostic model for disability



Data Repository

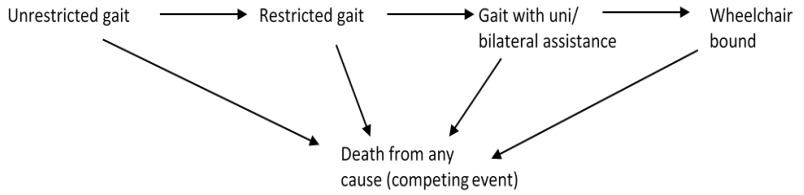


Machine learning



Collaboration & Validation

A model for continuous prediction of MS prognosis at early stage



Who we are and our area of interest

Main Subjects in the lab

- Exploring and characterizing different factors that can affect remyelination failure in MS.
- Developing new agent for a novel regenerative treatment for MS and studying their mode of function.
- Developing an effective multi-parameter prognostic calculation model of disability in multiple sclerosis, using advanced statistical and machine-learning methods.
- Further evaluating the mode of action of existing disease modifying drugs.

Keep it simple to people who are not in the field

- To discover new therapies approaches in order to cure the tissue damage in multiple sclerosis (MS).
- We are studding biological targets that can influence the optimal repair of myelin damaged in MS.
- We are developing a multi-parameter prognostic model for early stages of the disease.

Key Capabilities

What are we specialized in

- ELISA and Multiplex.
- WB analysis for cell signaling.
- Flow cytometry panels for T cells and macrophages sub-populations.
- Assay development of protein-protein interaction for HTS (HTRF).
- OPCs and Macrophages differentiation in-vitro.
- Mice models for MS: EAE and Cuprizone.
- IF histochemistry: for cells and neuronal histopathological specimens.
- Confocal analysis and ImageJ image analysis
- EM analysis for remyelination (G-ratio).

What specialized equipment we use to answer Q

- ELISA reader.
- EVE cell counter.
- Inter departmental equipment:
  - Canto II- Flow cytometer.
  - Confocal Microscope.
- Tel Aviv University: EM.
- Weismann institute: HTS – high thruput screenings.

How can we aid other scientists to answer their Q

- Usage of the ELISA reader, EVE cell counter.
- Help and consultation in IF staining, confocal analysis and imageJ software usage.
- Advice with stem cell differentiation models and demyelinating mice models.

What questions still needs to be answered, what is needed in order to answer them?

- Creating a database that can interact with The Chameleon, Namer, PACS for MRI scans and our Lab bio-repository and biomarkers levels results.
- Luminex reader for multiplex arrays.
- Available ECL documentation system in the interdepartmental equipment.
- Histopathological service for research.

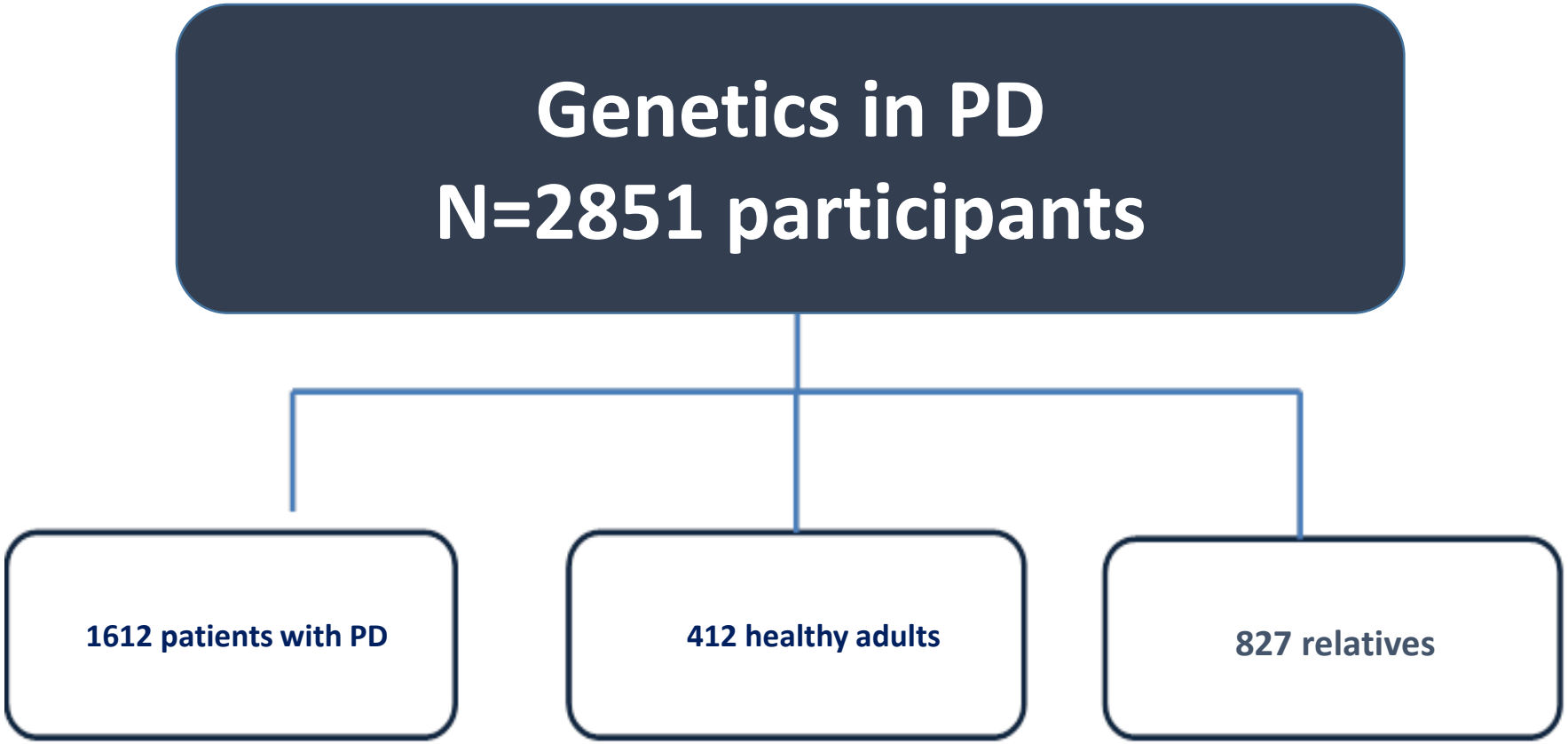
Laboratory for Early Markers of Neurodegeneration

LEMON
Laboratory for Early Markers of Neurodegeneration

Anat Mirelman, PhD- PI

Mission: identify early markers of neurodegeneration which allude to a pathological process and identify markers of progression

Tel-Aviv PD Genetic Project




Biological
Behavior
Genetics
Parkinson's disease
Cognition
Environmental
Neural changes

Anat Mirelman, PhD

- Genotype- phenotype
- Motor –cognitive reserve and interactions
- Gait and wearable sensors
- Sleep

Avner Thaler, MD, PhD

- Genotype- phenotype
- Inflammatory and Biological markers
- Potential compounds for disease modification

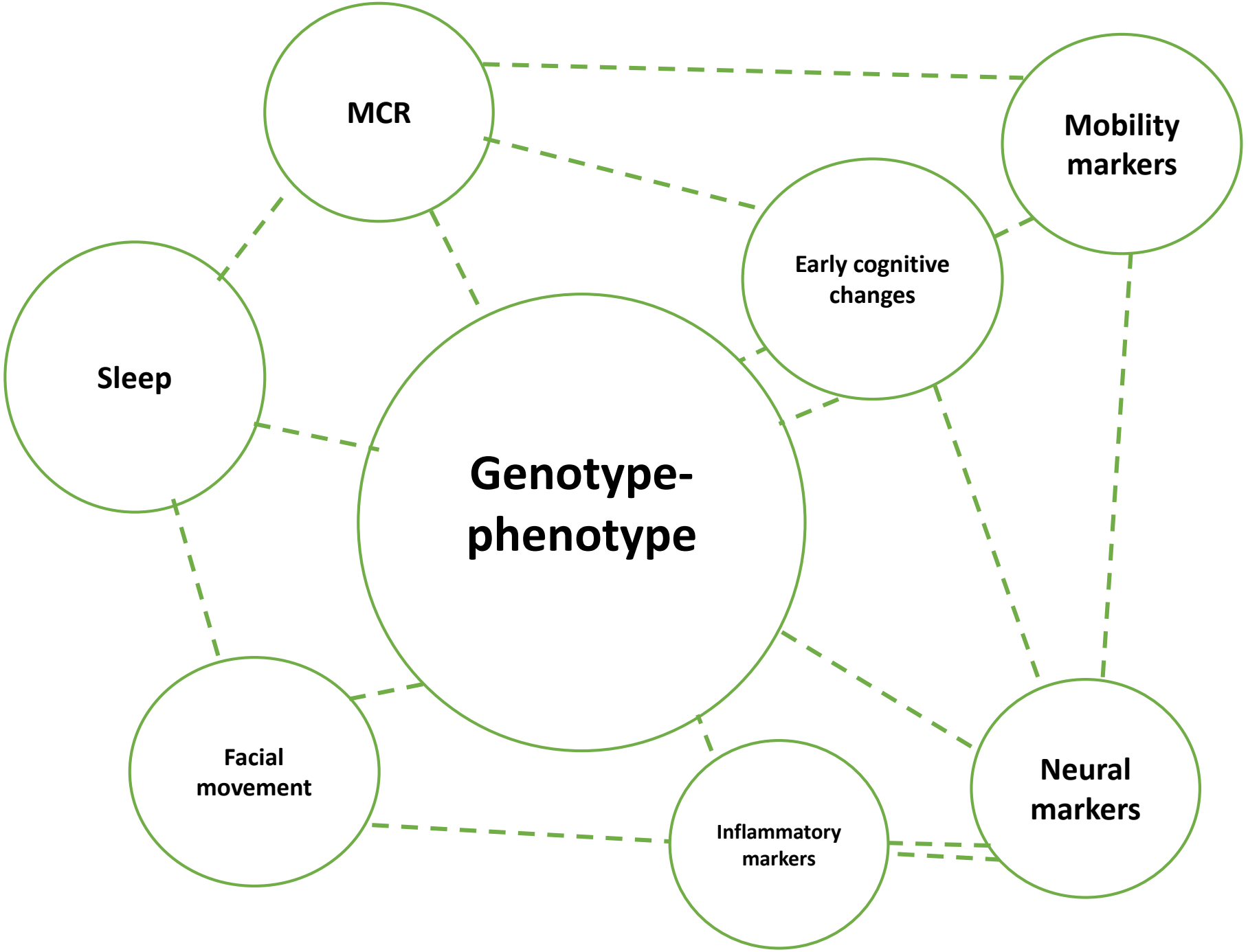
Inbal Maidan, PhD

- Electrophysiology Markers (EEG)
- Hemodynamic responses (fNIRS)
- Deep Brain Stimulation

Amgad Droby, PhD

- Structural and functional markers (MRI and fMRI)
- Combining tools for neural assessment (PET, SPECT, MRI)

23 students [6 PhD, 9 MSc, 8 BSc from Sagol, Medicine, Engineering, Computer science]


MCR
Mobility markers
Early cognitive changes
Sleep
Genotype-phenotype
Facial movement
Inflammatory markers
Neural markers

LEMONS  LEMONADE

Key Capabilities

What are we specialized in	What specialized equipment we use to answer Q	How can we aid other scientists to answer their Q
• Wearable sensors for the assessment of movement • Electrophysiology • Multimodal integration	• Wearables • EEG • EMG • fNIRS	• We are experts in behavior and clinical phenotypes


תודה


שנה טובה
עשיה
שגשוג
אהבה
הצלחה
בריאות
אושר
שנה טובה ומתוקה
yo-yoo.co.il

Brain Institute

Brain Institute	Leaders	Enhancing Neuroscience research in TLVMC	Enhancing collaboration

• Neurology
• Neurosurgery
• Psychiatry
• Neuro-rehab
• Affiliated Labs
• Sagol Brain Institute
	• Clinical directors
	• Labs PIs
		• Internal Grants - 700K (IS)
		• TAU Grants
		  • Aufzien – 1M (IS)
		  • Psychedelia - ?
		• Torino –TA Collab. – 800K (IS)
			• Advertising and opening all academic activities to all Brain Institute members
			• Monthly meeting

Calls for Grants Timeline

- Internal grants – March 2024
- Aufzien's grants – June 2024
- Aufzien's travel grants – on going
- Torino – TA grants – March 2024
  - 1st Meeting December 10,2023 in Tel-Aviv

TAU Synergies in Neuroscience Initiative

Nir Giladi, Tal Laviv, Bruria Ben Zeev, Nocham Wolpe

TEL AVIV UNIVERSITY אוניברסיטת תל אביב

- Improving collaboration between TAU campus, its affiliated hospitals and the neuroscience industry in Israel
- Partners:
  - TAU Faculty of Medicine
  - Sagol School of Neurosciences
  - 14 affiliated hospitals
  - BrainstormIL (145 startup companies)
- 1st join meeting February 20, 2024 Smolarsh Hall
  - Neuroscience website at TAU
    - All labs will present their activities – one page

Autoimmune Neurology research laboratory

Avi Gadoth

Lab director – Valeria Briskin

Autoimmune Neurology

- 2007
- Encephalitis, Peripheral nerves, autonomic
- Expanding
- Treatable

Current work – 3 months

- T cell response
- Epitope mapping
- HLA correlation/association

Future directions

- Protein production
- Synaptic transmission and mechanisms - cooperation
- Single cell RNA – mechanisms and difference from infectious
- Protein identification – Phage, proteomics…

Cooperation

- Yifat Alcalay
- David Hagin
- Moshe Giladi
- Tamar Rubinek

Who we are:

Name of lab/Location	PI/Manager
Microsurgery and Plastic Surgery laboratory (The Plastic Surgery Department) **Address:** **Founders building** 6th floor Room 8,11	Dr. Inna Solodeev, Lab Manager Prof. Yoav Barnea  Prof. Eyal Gur 

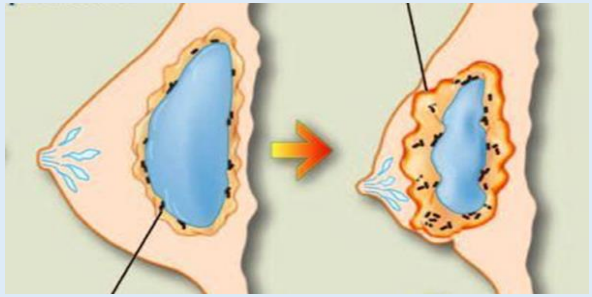
Area of interest.

Problems related to breast reconstruction:

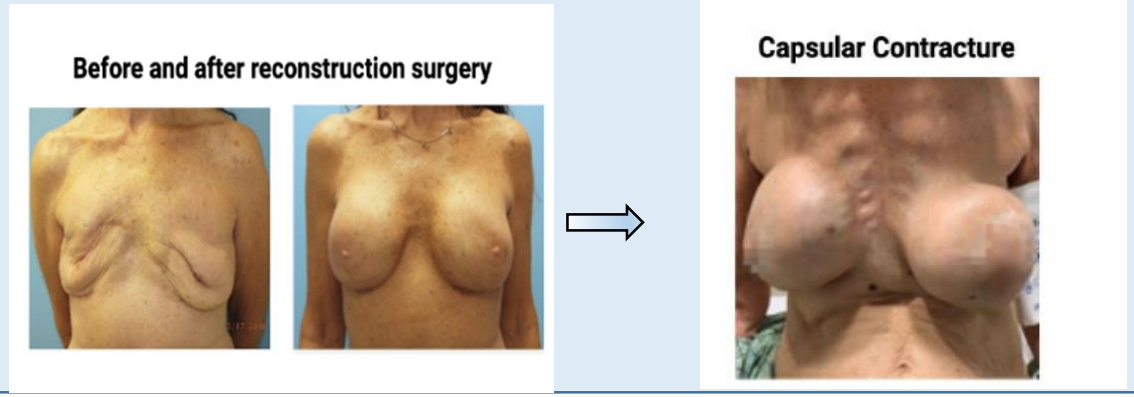
1. Prevention and Treatment of Capsular Contracture in Implant-Based Breast Reconstruction Following Radiotherapy

Women with breast cancer who undergo postmastectomy radiation therapy has the highest risk of Capsular Contraction with 70-100% incidence rate.

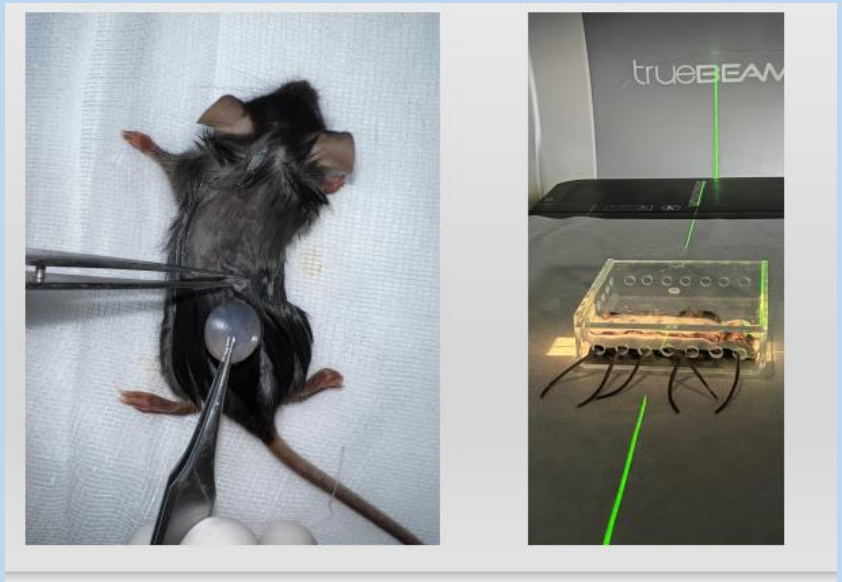
Capsular Contraction



Fibroblast layer



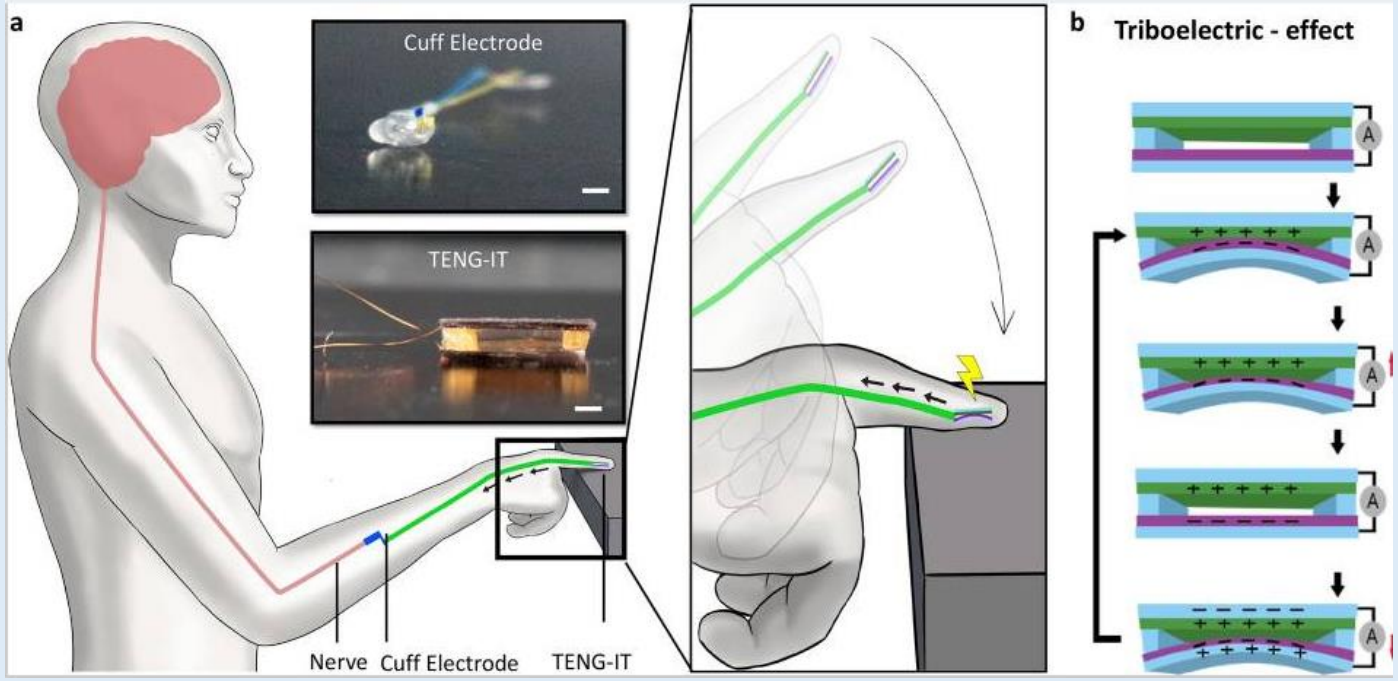
Mouse model of breast implant capsular contracture induced by targeted radiation



Etiology and treatment

2. Restoring Tactile Sensing in post mastectomy breast cancer patients by a Triboelectric Nanogenerators Array

Collaboration with Tel-Aviv university



Triboelectric Nanogenerator for restoring tactile sensation.

This integrated tactile device is implanted under the skin and translates tactile pressure into electrical potential, which it relays via cuff electrodes to healthy sensory nerves, thereby stimulating them, to mimic tactile sensation.

The goal:

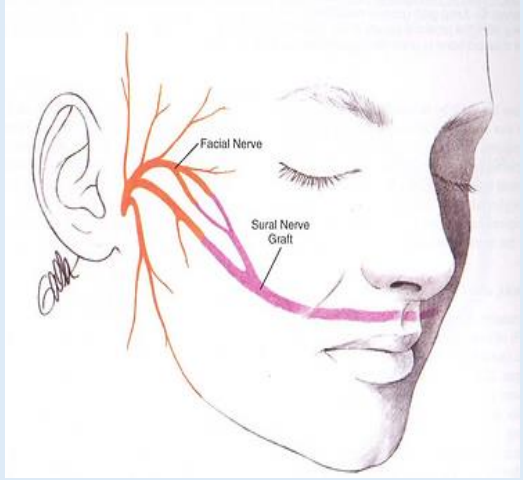
to restore the ability to sense touch for breast cancer post nipple-sparing mastectomies by developing

- a sensitive
- self-powered

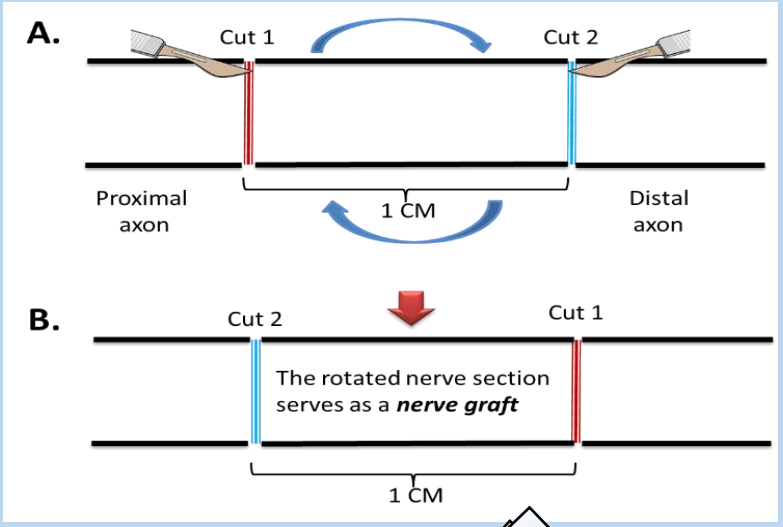
tactile system integrated with sensory neurons.

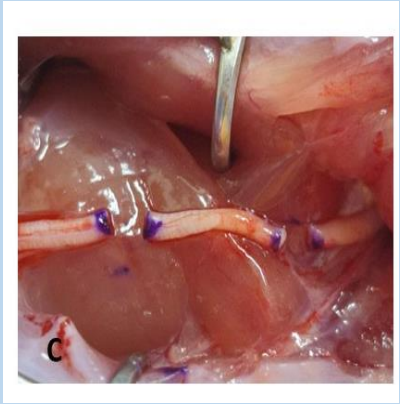
Peripheral nerve regeneration

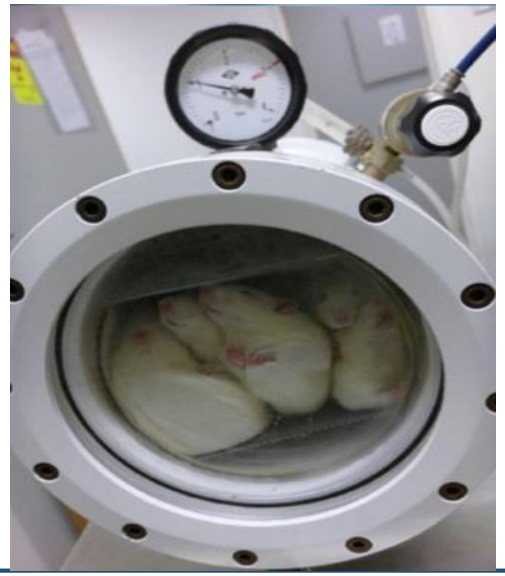
Facial paralysis

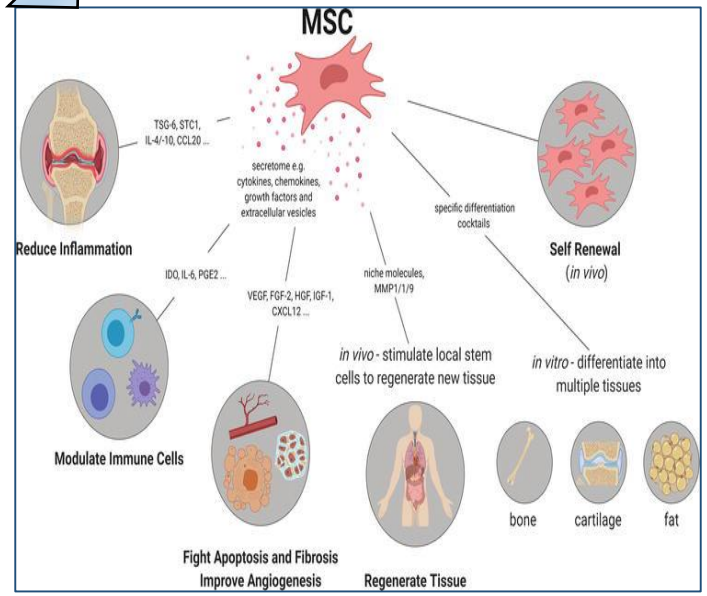


The results of these complex reconstructive procedures are dependent on the rate and quality of axonal growth through the nerve graft.









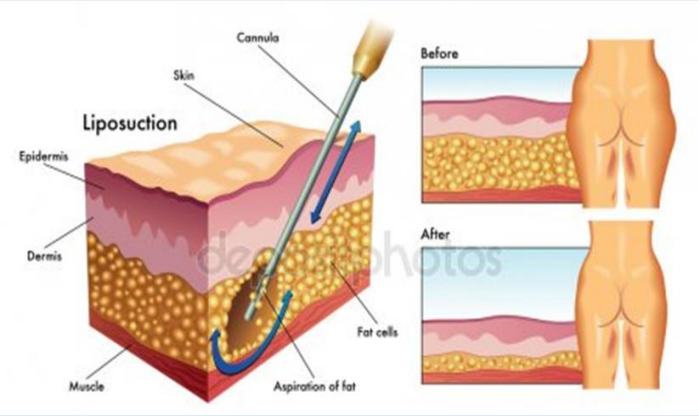
Cryopreservation of large tissues and organs

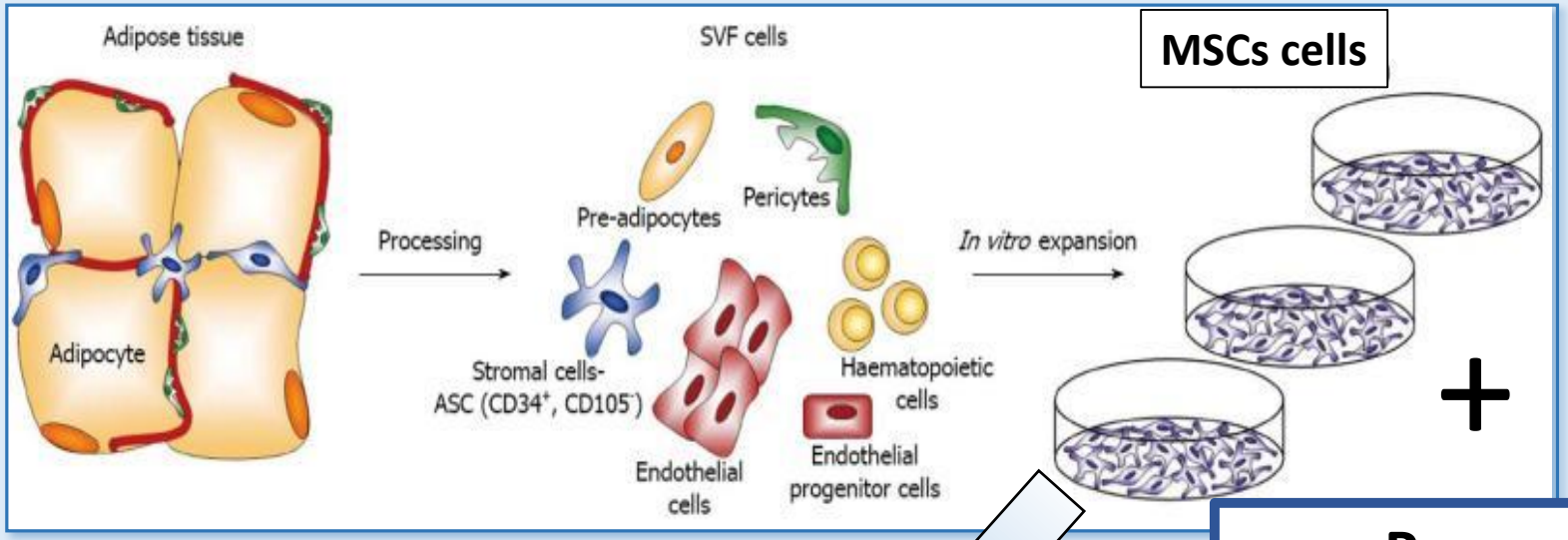
On day 32 days post-vitrification and initial transplantation (POD32), the rat was able to walk using the cryopreserved limb.

Continue to develop protocols for long-term preservation of large tissues for clinical use.

Pre-conditioning of Human Mesenchymal Stem Cells for transplantation application

Liposuction

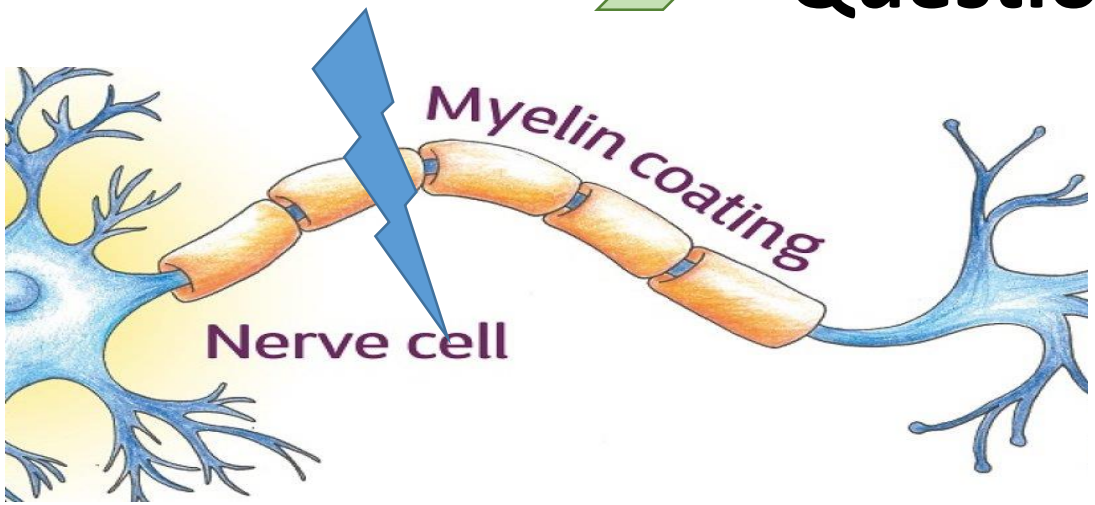


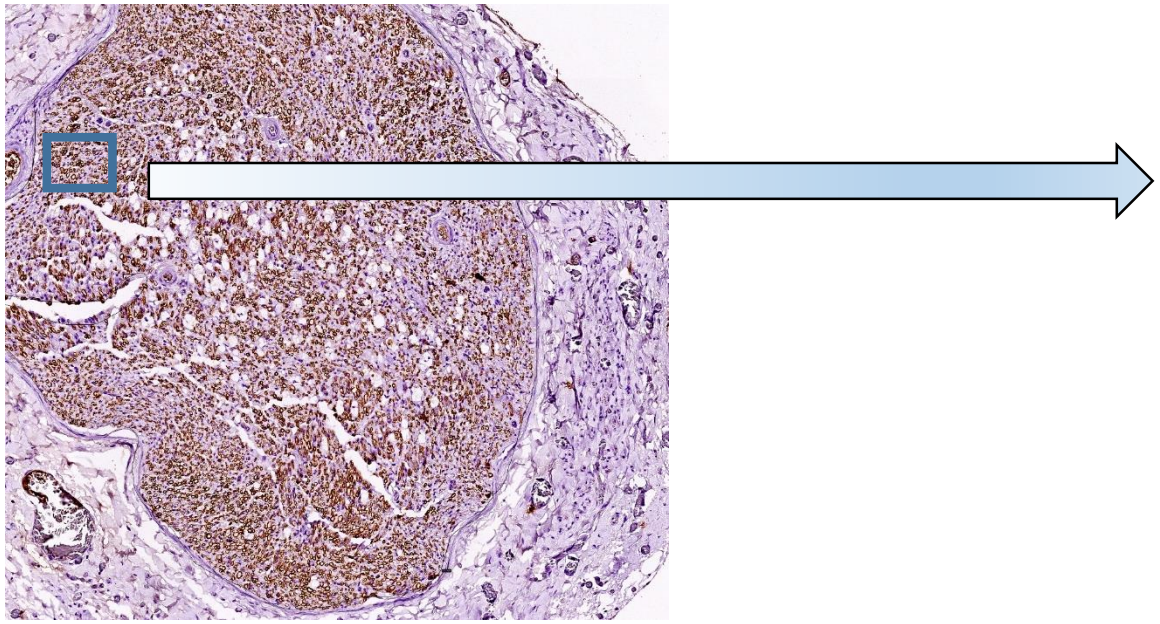


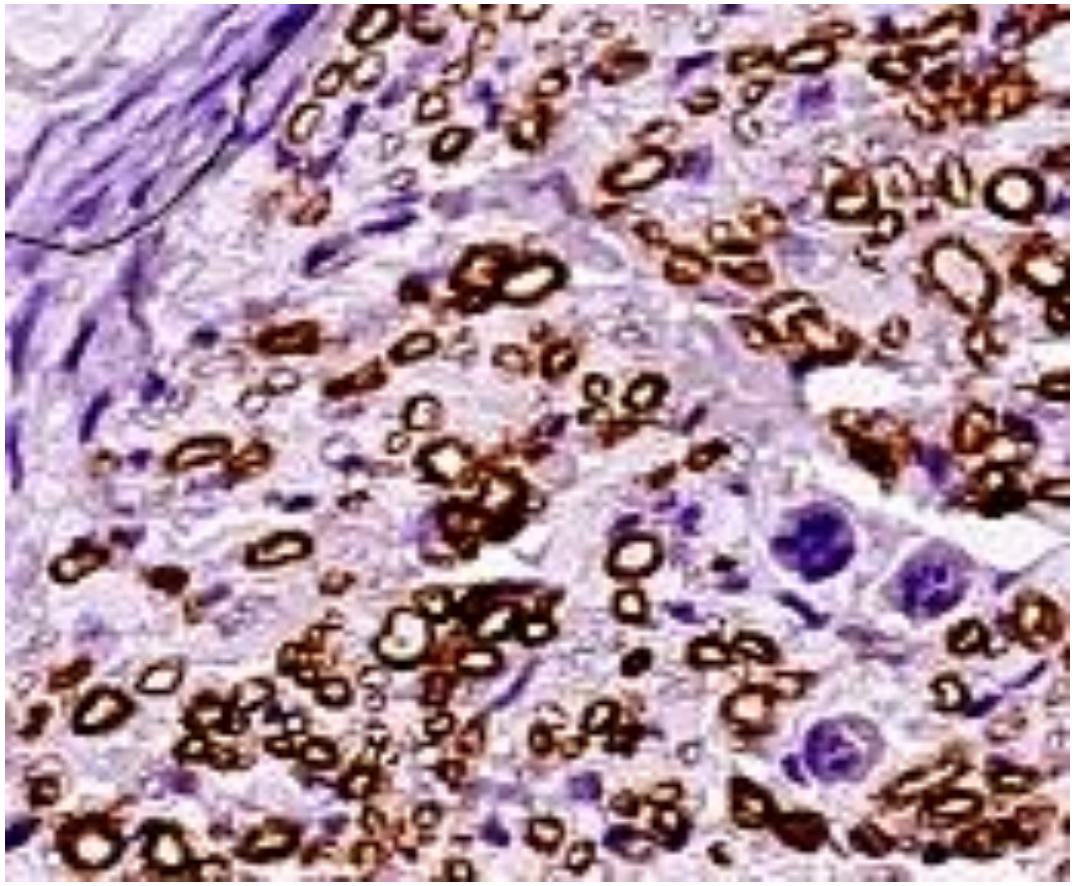
Pre-conditioning

- **Differentiation capacity** ↑
- **Tissue regeneration capacity** ↑
- **Immunomodulatory effects** ↑
- **Antimicrobial properties** ↑
- **Neuroprotective capacity** ↑

Question:







Dr. Miriam and Sheldon G. Adelson Clinic for Drug Abuse Treatment and Research

10 Dafna street

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Prof. Einat Peles Ph.D.
Research Director

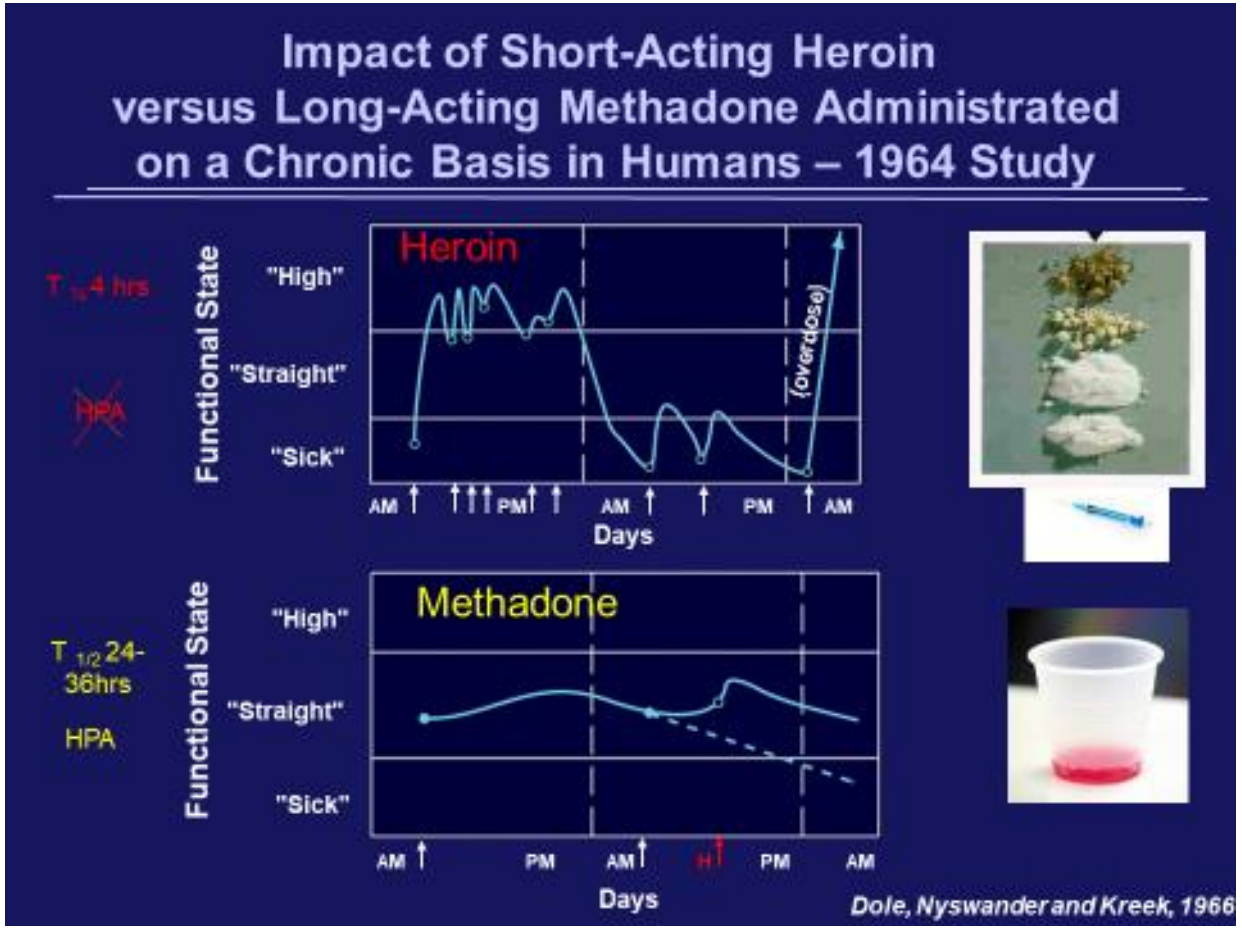
Anat Sason, MA
Research Assistant

Yali Abramsohn
Clinic Director

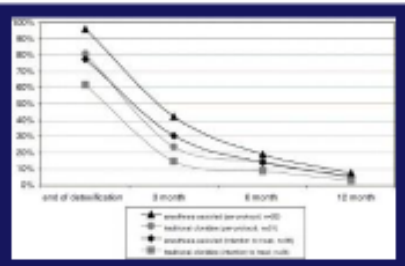
Prof. Shaul Schreiber
Medical Director

Research Topics

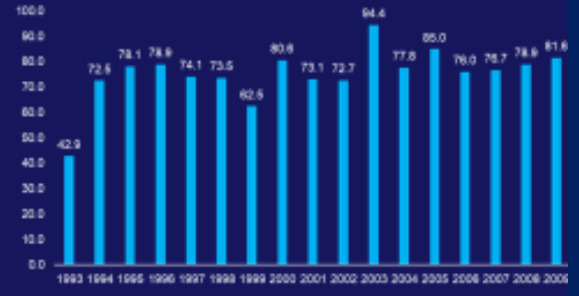
- ✓ Addiction Medicine
- ✓ Opioid use disorder in Methadone Maintenance Treatment (MMT)
- ✓ Patients characteristics and outcome (predictors)
- ✓ Mental and physical comorbidity
- ✓ Pain indices
- ✓ Sleep quality
- ✓ Cognition
- ✓ Addiction risk factors
- ✓ Genetic predisposition
- ✓ Epigenetics
- ✓ Stigma, Ignorance



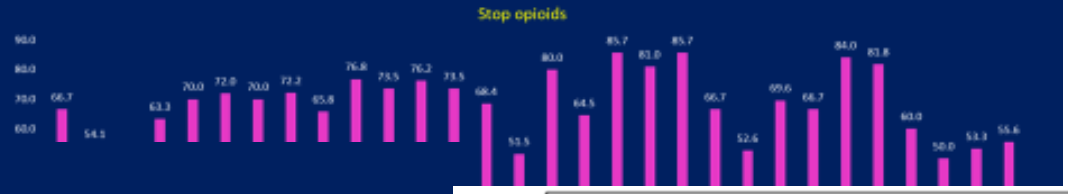
Opioid abstinence following detoxification



Dr. Miriam & Sheldon G. Adelson Clinic for Drug Abuse Treatment & Research Tel Aviv Sourasky Medical Center

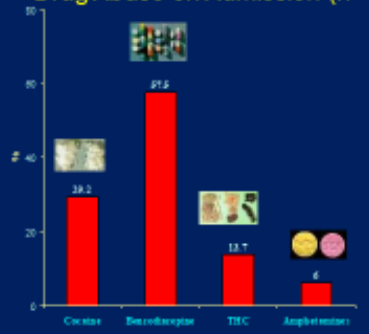


Main goal: opioid discontinuation



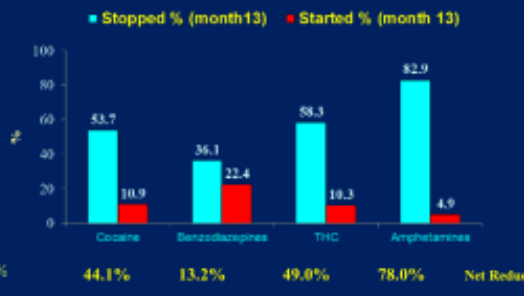
Other substance?

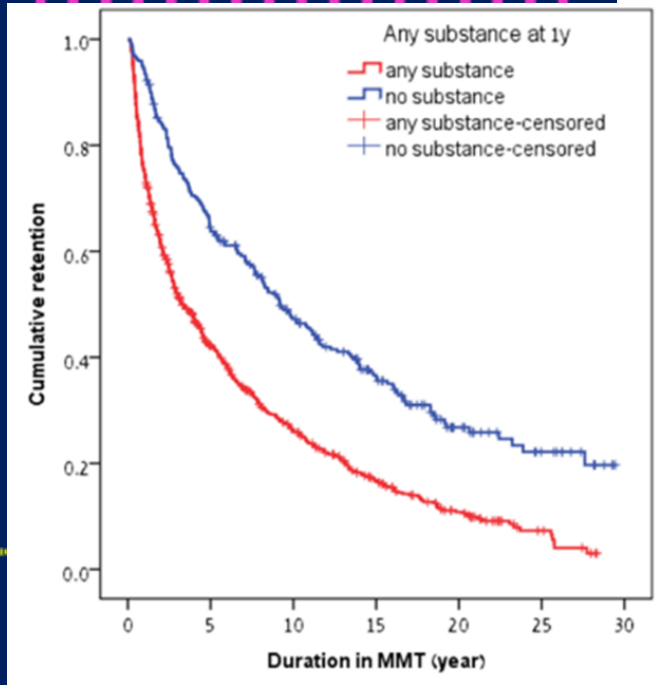
Drug Abuse on Admission (n=1120)*



*unknown n=4, **amphetamines unknown 5.1%

Net reduction of substance after one year





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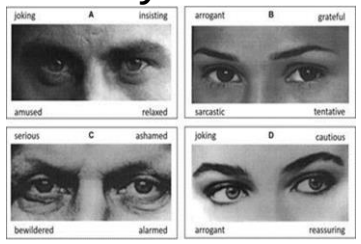
Methodology

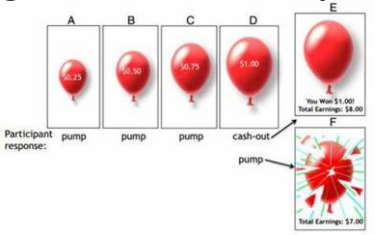
- Questionnaires
- computerized tasks
- Pain Algometer (pain threshold)
- Heart rate variability
- Urine test for substance
- Blood measures (methadone level)
- Genetics, Epigenetics

Theory of Mind

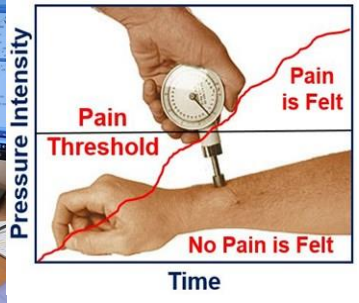


Pain empathy

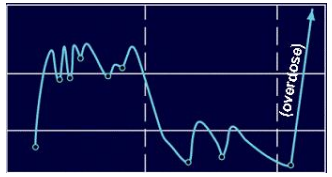
Balloon Analogue Risk Task (BART)

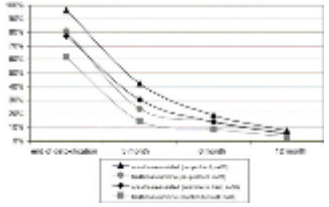


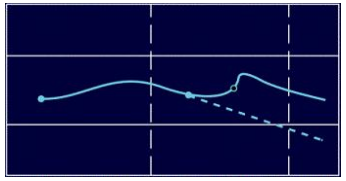
Algometer



Opioid Use Disorder







Delay
15 years women
20 years men

Detoxification

HIV

Stree
t

overdose

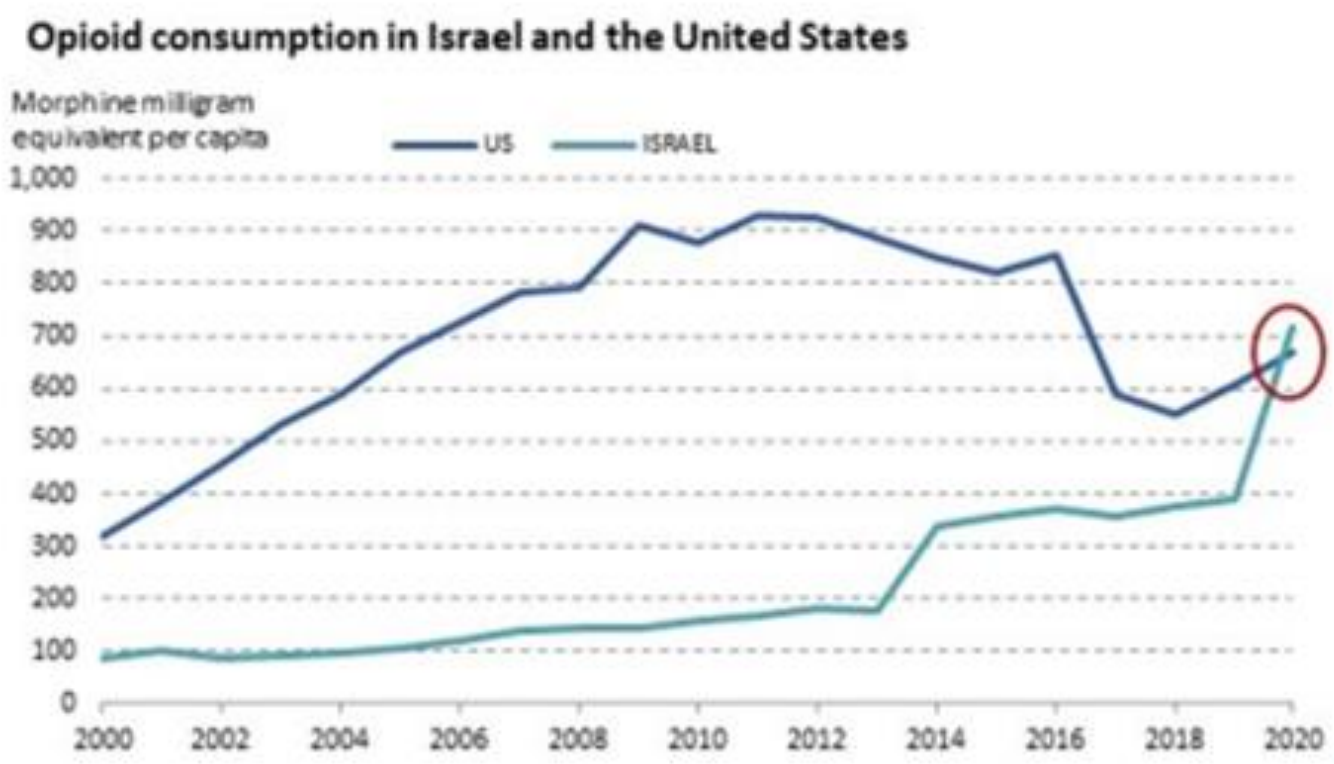
HCV

Arrest

Rehabilitation

MMT

ישראל מדביקה את ארה"ב



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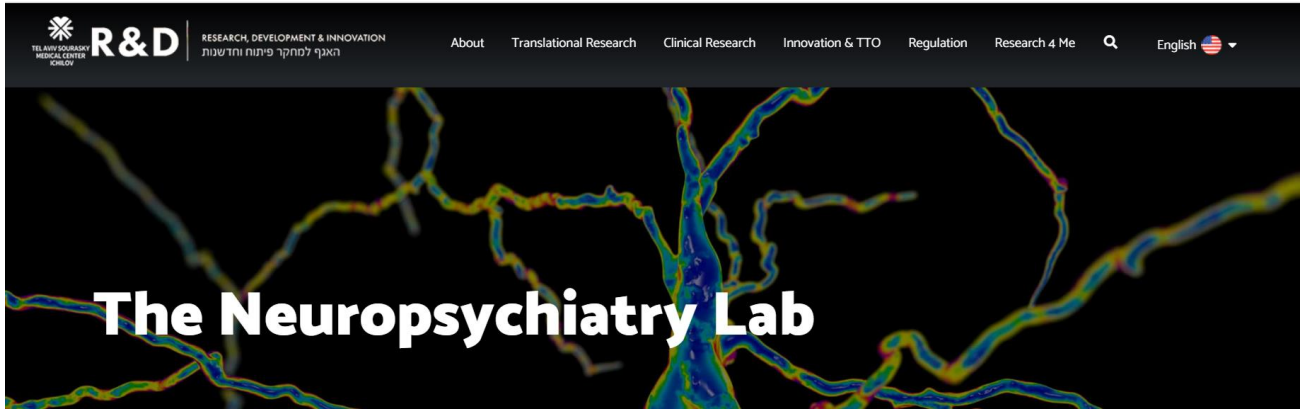
What questions still needs to be answered, what is needed in order to answer them?

- Biomarker for develop addiction (grant with Prof. Segev Barak)
- Opioid epidemic- Fentanyl prevalence overdose??
- Brain imaging
- “Medical” cannabis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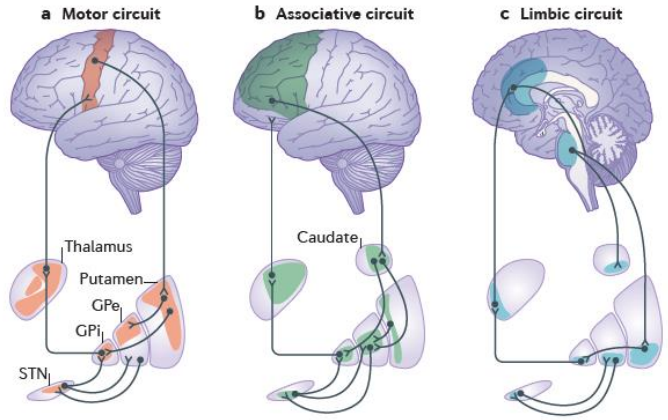
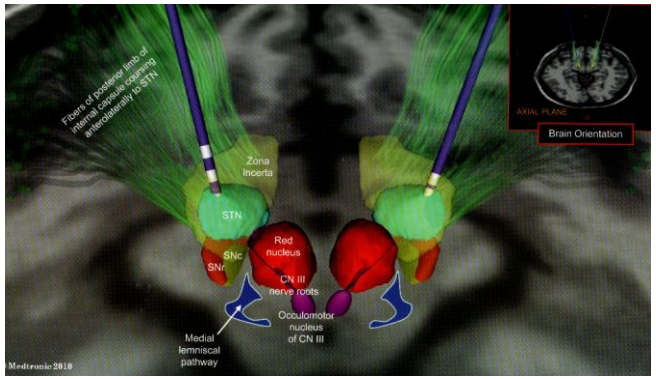
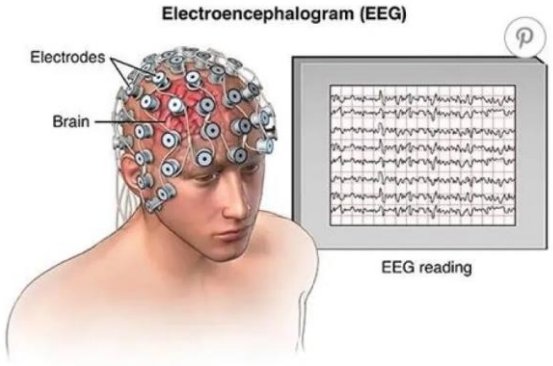
R&D
RESEARCH, DEVELOPMENT & INNOVATION
האגף למחקר פיתוח וחדשנות
About
Translational Research
Clinical Research
Innovation & TTO
Regulation
Research 4 Me
English
The Neuropsychiatry Lab

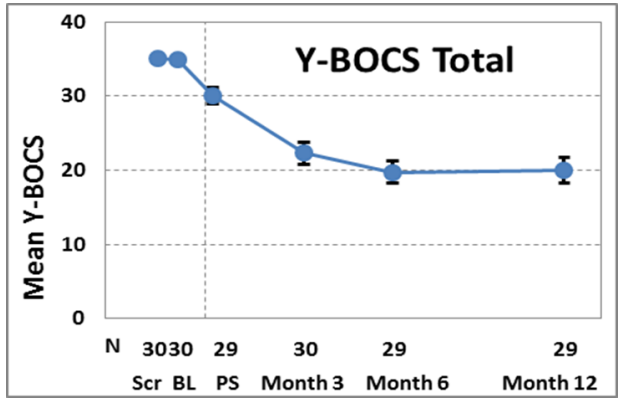

a Motor circuit
b Associative circuit
c Limbic circuit
Thalamus
Putamen
GPe
GPi
STN
Caudate


Fibers of posterior limb of internal capsule coursing anterolaterally to STN
Zona incerta
STN
Red nucleus
SNc
SNr
CN III nerve roots
Oculomotor nucleus of CN III
Medial lemniscal pathway
AXIAL PLANE
Brain Orientation
Medtronic 2010


BRAINSENSE SURVEY
Right STN
SENSE CHANNELS
REFRESH BRAINSENSE SURVEY
NO ALERTS
CLOSE

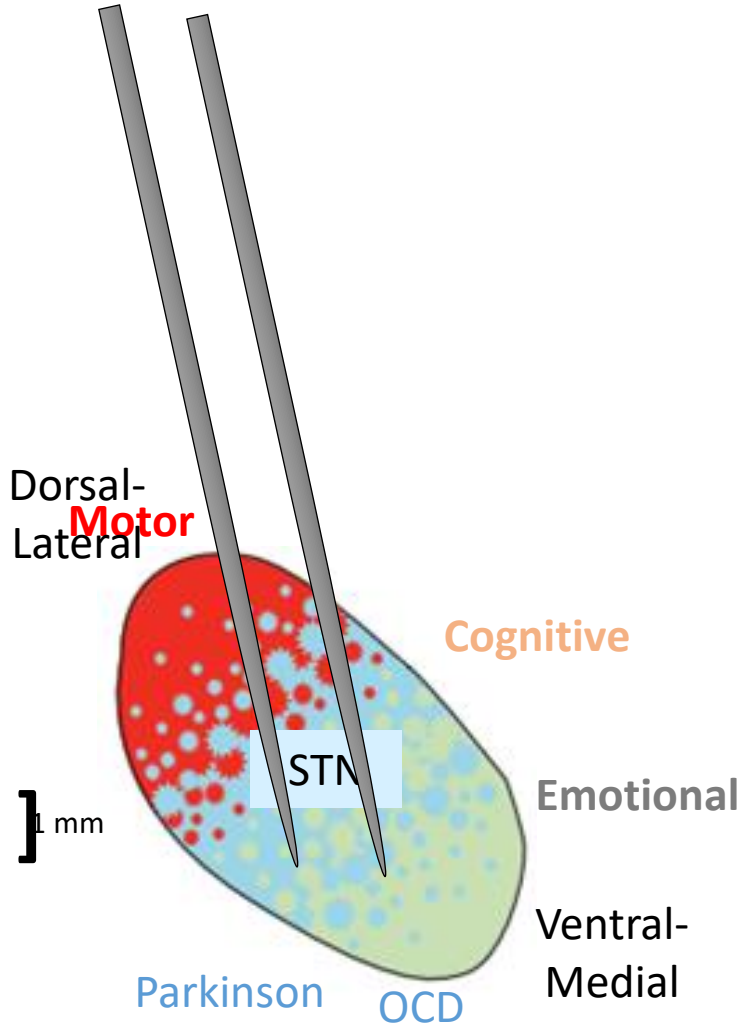

Electroencephalogram (EEG)
Electrodes
Brain
EEG reading

Deep Brain Stimulation - DBS



Menchón et al, Mol Psych, 2019 (n=30)

- Movement Disorders:
  - Parkinson's Disease
  - Essential Tremor
  - Dystonia
- Major Depression
- **OCD**
- Tourette's Syndrome
- Addiction
- Alzheimer's Disease
- Epilepsy
- Anorexia Nervosa
- **Schizophrenia**



Who we are and our area of interest

Name of lab/Location	PI/Manager	Main Subjects in the lab	Keep it simple to people who are not in the field
• Neuropsychiatry Lab • Rehabilitation Building, Psychiatry Institute, Ground floor, rooms 27-30	• Dr. Renana Eitan (Chair of Psychiatry) • Dr. Keren Avirame (Director of Research, Psychiatry)	• Electrophysiological makers of Neuropsychiatric Disorders • Biomarkers of illness dynamics to develop personalized and adaptive neuromodulation	• Novel brain therapies for Neuropsychiatric disorders such as OCD, Schizophrenia and MDD

Key Capabilities

What are we specialized in	What specialized equipment we use to answer Q	How can we aid other scientists to answer their Q
• Cortical and Sub-cortical Electrophysiology • Disease-specific neuropsychological tasks • Multivariate models pathological behaviors and therapy-induced effects	• Brain stimulation (DBS) • Various electrophysiological recordings and analyses : single-unit, LFP, EEG. • Various cognitive, emotional and social tasks	• ISF Precise Medicine - Neuropsychiatry Group in TASMC with Dr. Inbal Meidan and Dr. Genela Morris • Innovation Authority – Closed-loop adaptive brain stimulation in Schizophrenia with Prof. Leon Deouell • Part of ReTune DFG Consortium – led by Prof. Kuhn (Charite Berlin) • Collaboration with MRC Brain Network Dynamics Unit in Oxford – Prof. Denison

What questions still needs to be answered, what is needed in order to answer them?

- To collect and organize a database of patients operated in Ichilov and recorded for a long period of time during different states (Sleep, Tasks, Exercise, Rest).
- To explore and develop motor, cognitive and emotional tasks.
- To group experts in electrophysiology.
- To collaborate with engineers to advance close-loop algorithm.

Ichilov Scientific Ecosystem

Instructions:

1. Presentation in English, you can talk in Hebrew
2. Five minutes no longer, you will be stopped
3. use these slides, additional slides can be put during the time frame of 5 minutes
4. No need to show data the purpose is the Ecosystem in Ichilov
5. Keep in mind, how will I Know other labs. In order to make more collaborations

Who we are and our area of interest

Name of lab/Location	PI/Manager	Main Subjects in the lab	Keep it simple to people who are not in the field
• Immune Diagnostic Laboratory • The Clinical Immunology laboratory – Sourasky 1st floor, Agaf Z.	• David Hagin • Freund Tal • Yifat Alcalay	• Studying patients with suspected primary immunodeficiency disorders (AKA Inborn Errors of Immunity – IEIs). • Identifying anti-viral T-cells.	• We are trying to better understand the effect of certain defined immune defects on the function of the immune system. • We are trying to promote donor-derived anti-viral T-cell therapy

Key Capabilities

What are we specialized in	What specialized equipment we use to answer Q	How can we aid other scientists to answer their Q
• Cell cultures. • Flow-cytometry. • Developing functional assays for evaluating immune response (mostly phospho-flow).	• Flow cytometry. • Western.	• Functional assays. • Patients with defined monogenic disorders (‘experiments of nature’).

What questions still needs to be answered, what is needed in order to answer them?

- Novel candidate genes.
- (Many of you are already helping).
- KI / KO and transfections.
- Genetics / single cell analysis.

Dalit Ben-Yosef

Stem Cell Research lab, Fertility & IVF Institute

CORAL – Center od Regeneration and Longevity

The Wolfe PGD-Stem Cell Research Lab in the Institution of Reproduction and IVF

>> Our Vision

During fertilization, the human sperm and egg unite to form the developing fetus. These early phases of preimplantation development are considered one of the most fundamental questions in cell biology.

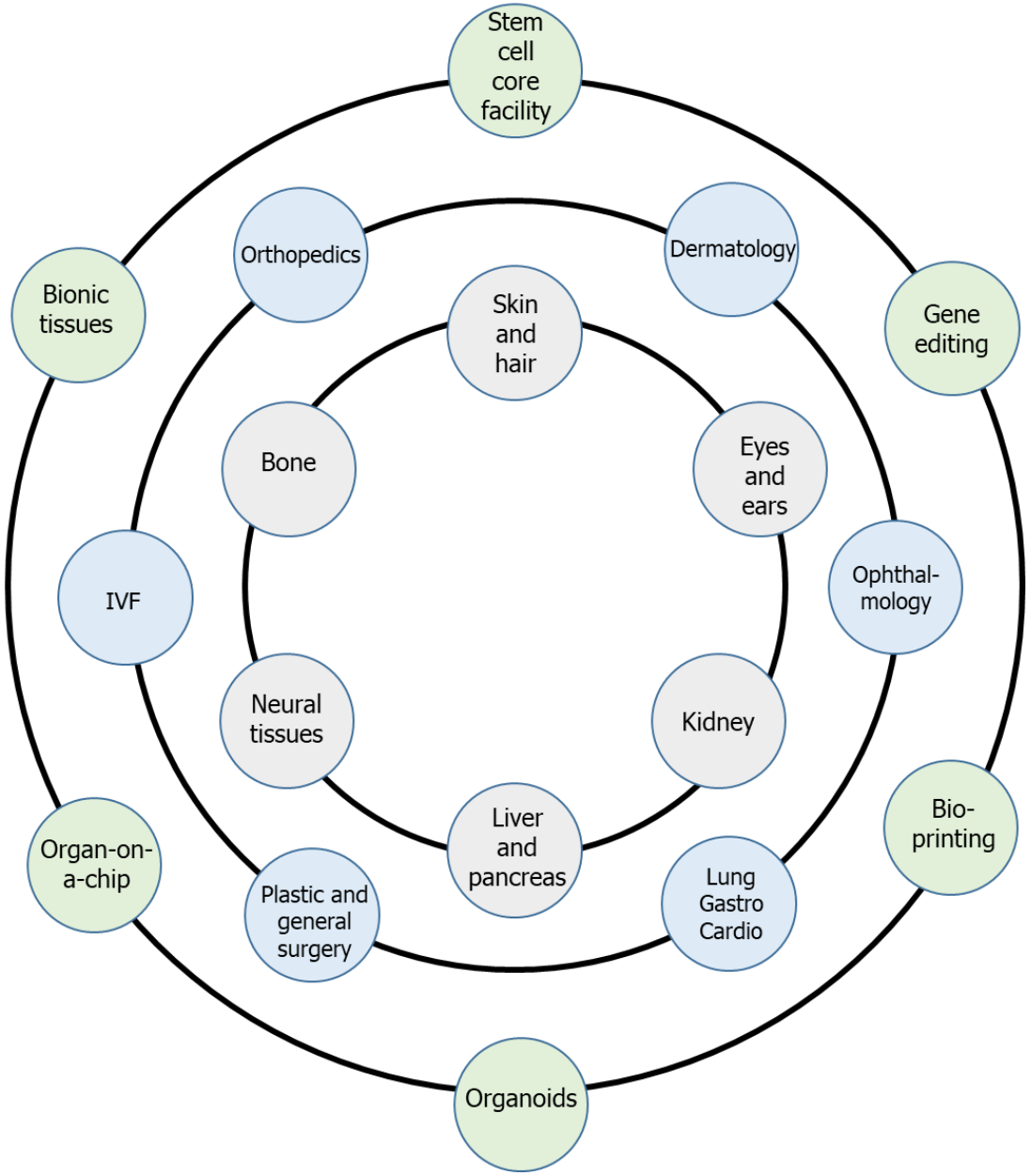
Our research lab focuses on deciphering these initial stages of embryonic development in order to understand how these processes are controlled in normal development and what happens as they stray from it, which leads to severe genetic diseases.

Our research model include human embryonic stem cells (hESC) that we derive directly from diseased embryos in order to study the mechanisms underlying the development of genetic diseases.

CORAL

Center for Regeneration And Longevity

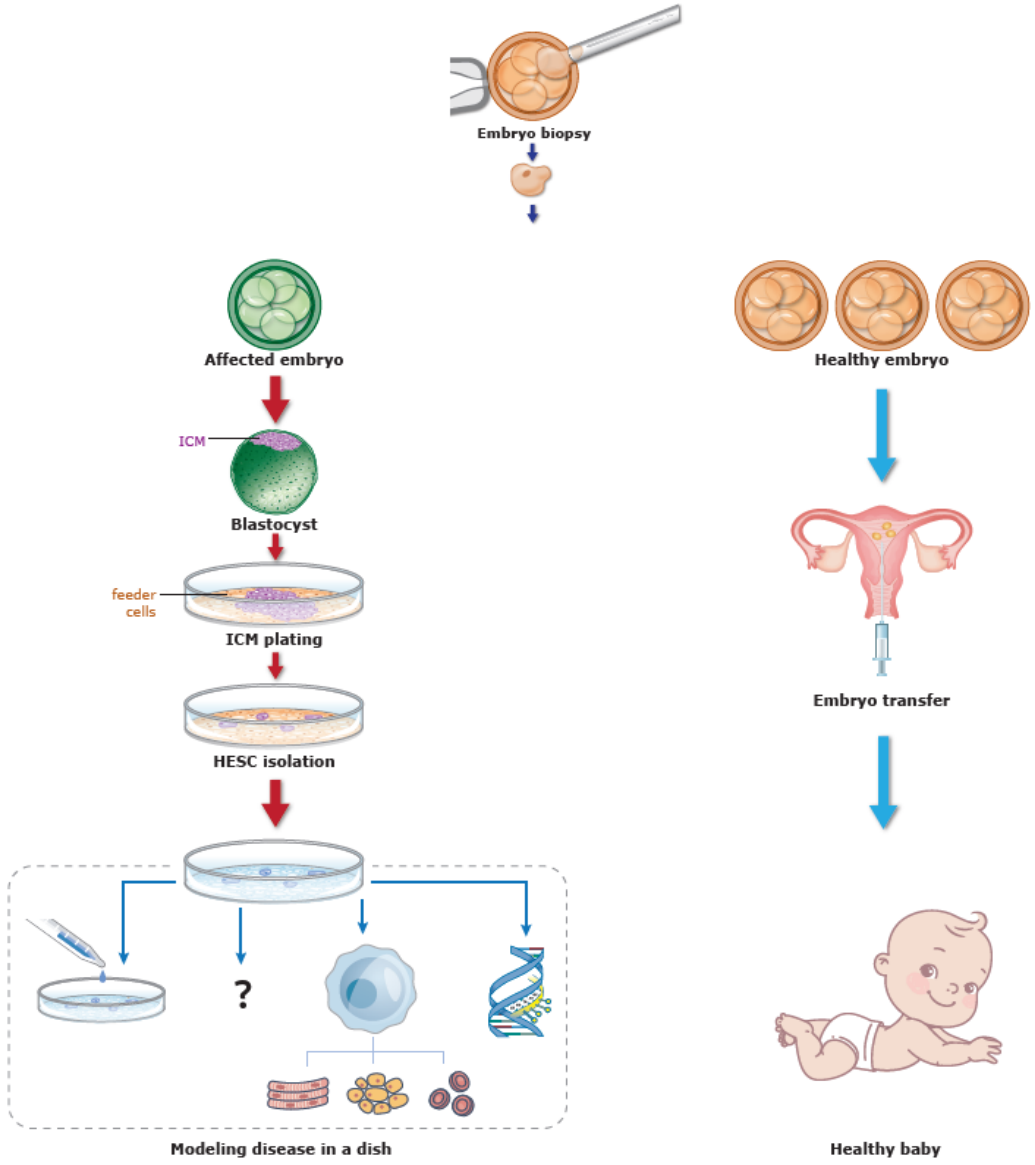
Implanting relevant and advanced technologies onto existing structures



Who we are and our area of interest

Name of lab/Location	PI/Manager	Main Subjects in the lab	Keep it simple to people who are not in the field
• **Stem Cell Research lab, Fertility & IVF Institute** • **CORAL – Center od Regeneration and Longevity**	• **Dalit Ben-Yosef** • **Dep. Of Cell & Developmental Biology & Sagol School of Neuroscience, TAU**	• Embryo Development • Stem Cells • Regeneration • Genetic diseases	

PGD & Diseased hESC lines
iPs
Differentiation
Organoids
Genotype-phenotype



Key Capabilities

What are we specialized in	What specialized equipment we use to answer Q	How can we aid other scientists to answer their Q
• Embryo micromanipulation • ES & iPs • Stem cells & pluripotency • Stem cell differentiation in 2D & 3D (Organoids) • CRISPR • Neural differentiation • Differentiation into colon organoids	• Laser micromanipulation • single-cell multiplex-nested PCR analysis . Simultaneous amplification of up to 30 DNA loci in a single multi-nested PCR • Fluorescence Microscope • Molecular analysis • Bulk RNAseq • Functional assays	"שאל בני ונען"...

What questions still needs to be answered, what is needed in order to answer them?

- **Bioinformatics - mainly for analyzing RNAseq data**
- **Ca^{2+} imaging**
- **MEA – Micro Electrode Array**

Ophthalmology stem cells lab
Tel Aviv medical center

Research Directors

Prof. Adiel Barak MD

Dr. Aya Barzelay MD PHD

Group Members

Moshe Benhamou, PhD

Yahel Shechter, M.sc. student

Physicians

Prof. Igal Leibovich MD

Dr. Benjamin Shalev MD

Dr. Ran Ben-Cnaan MD

Dr. Ilan Feldman MD

Collaborations

Prof. Tal Dvir, laboratory of tissue engineering and regenerative medicine, Tel Aviv university

Prof. Eyal Gur MD, Dr. Nir Shani PhD, DR. Bejamin Meilik MD, Department of Plastic and reconstructive surgery

Who we are and our area of interest

Name of lab/Location	PI/Manager	Main Subjects in the lab	Keep it simple to people who are not in the field
• Stem Cells Ophthalmology laboratory • Tel Aviv Sourasky Medical Center	• Barak Adiel • Barzelay Aya.	ADIPOSE-DERIVED MESENCHYMAL STEM CELLS therapy for macular degeneration 3 D printing and implanting of retinal tissue	Replacing dead RPE cells to prevent blindness

Key Capabilities

What are we specialized in	What specialized equipment we use to answer Q	How can we aid other scientists to answer their Q
• RPE cells transformation from mesenchimal cells • 3D printing of retinal tissue • Implanting 3D tissue into subretinal area	• 3D printing collaboration with Tal Dvir lab • Complex virteo retinal surgeries in Biotech farm lab.	• Ophthalmic expertise including cornela and retinal knowledge.

What questions still needs to be answered, what is needed in order to answer them?

- Refine our work on RPE transformation for ADIPOSE-DERIVED MESENCHYMAL STEM CELLS
- Collaboration with other labs to implament photoreceptor cells into 3D retinal organ
- Implantation of retinal organ in live pigs and showing functionality.
- Convertion our work to GMP standard to transfor lab woprk to first in human

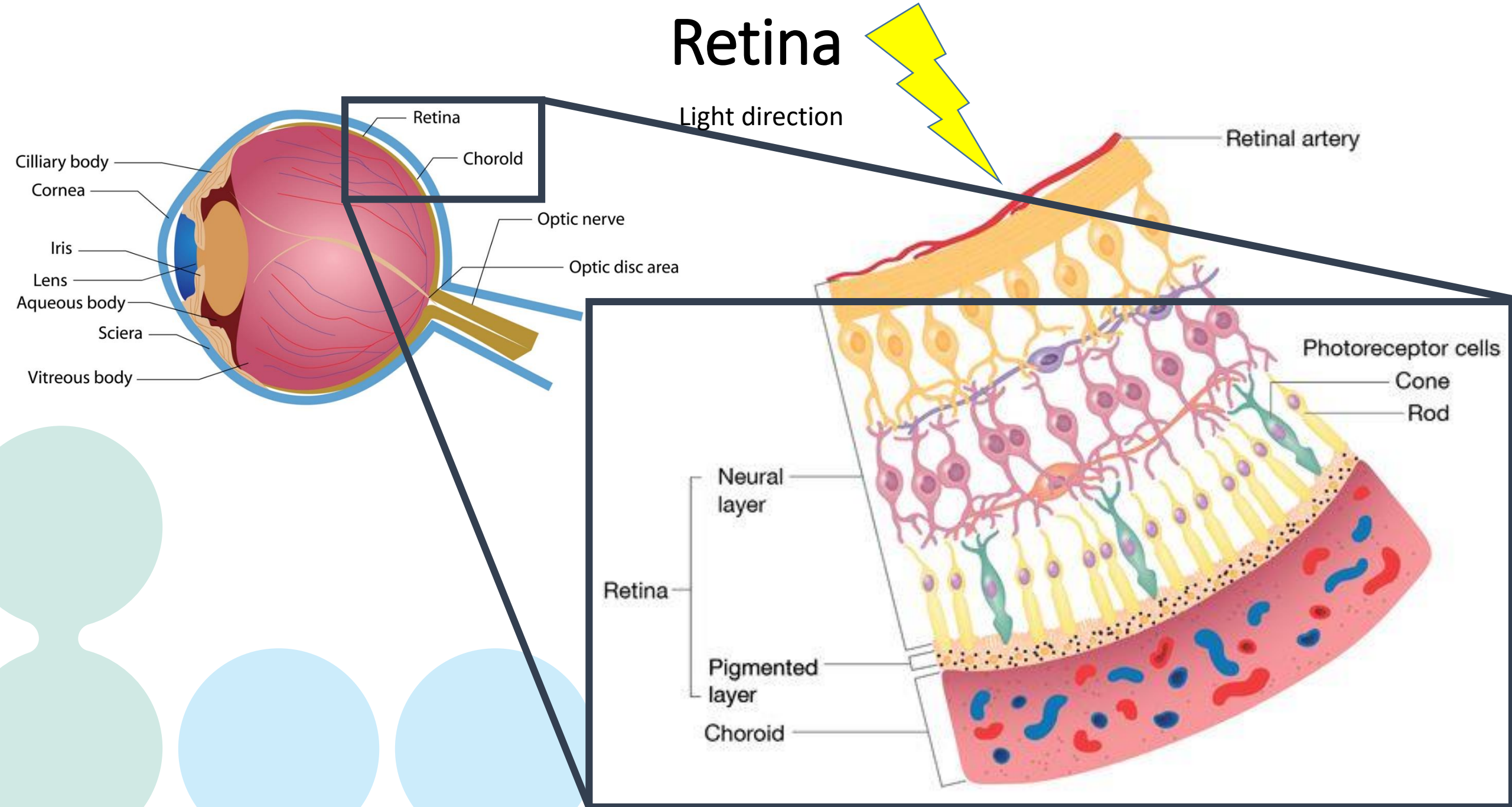
3D bioprinting of a vascularized retina

Yahel Shechter

dvir lab
TISSUE ENGINEERING & REGENERATIVE MEDICINE

Ophthalmology stem cells lab
Tel Aviv medical center

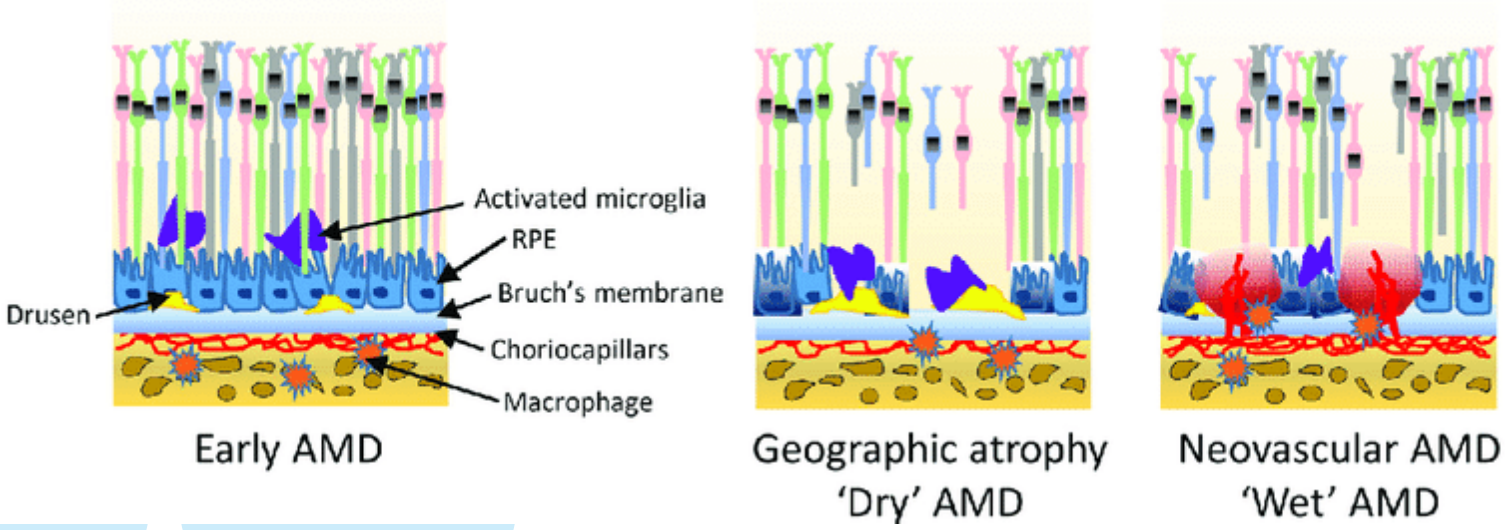
Retina


Light direction
Retina
Chorold
Cilliary body
Cornea
Iris
Lens
Aqueous body
Sciera
Vitreous body
Optic nerve
Optic disc area
Retinal artery
Photoreceptor cells
Cone
Rod
Neural layer
Retina
Pigmented layer
Choroid

AMD

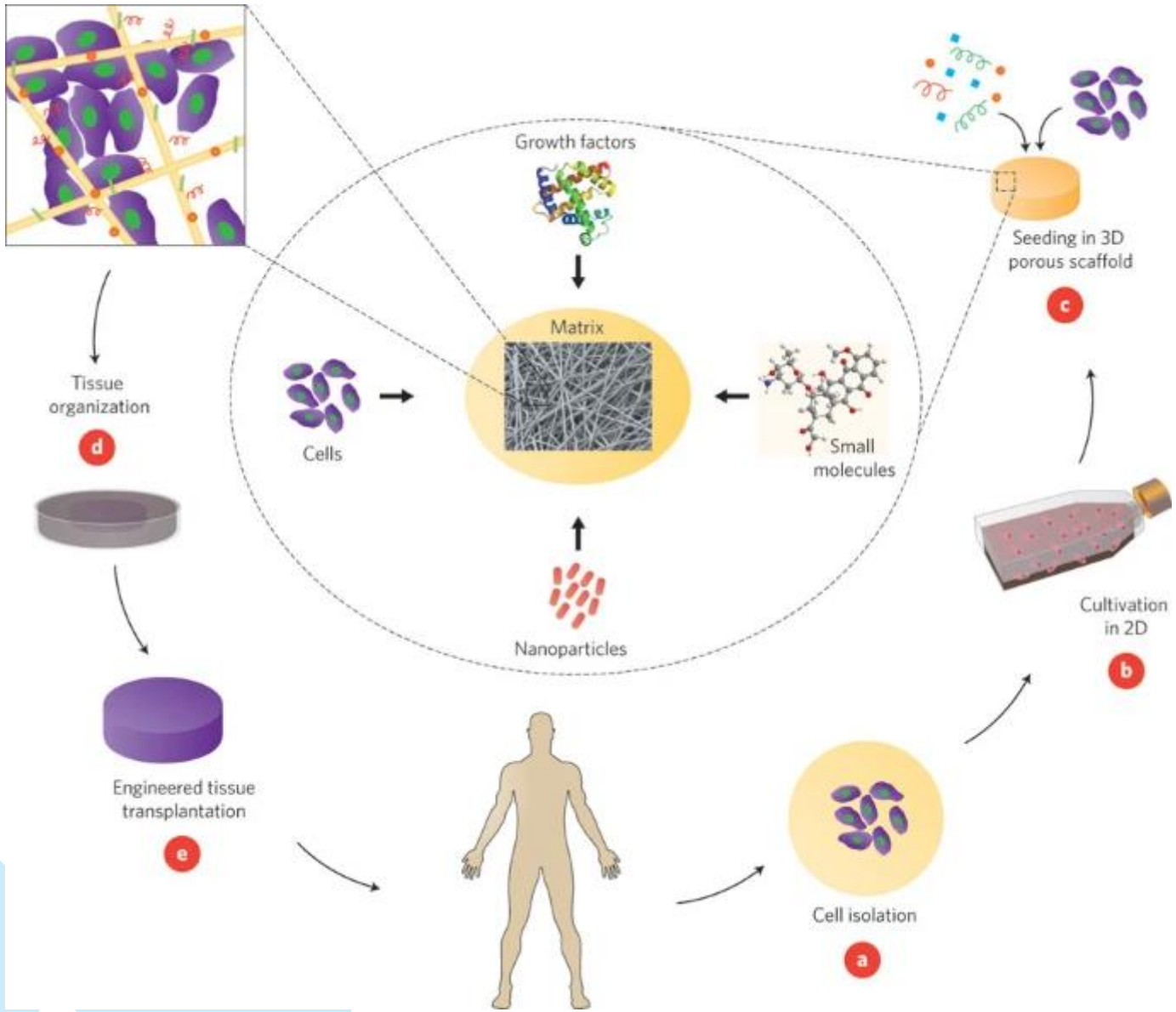
- **A**ge-related **M**acular **D**egeneration
- Chronic disease of the central retina
- The major cause of vision loss worldwide

- Dry (non-exudative)
  - 90% of cases of the disease
  - deterioration the photoreceptors and RPEs
  - currently has no treatment
- Wet (exudative)



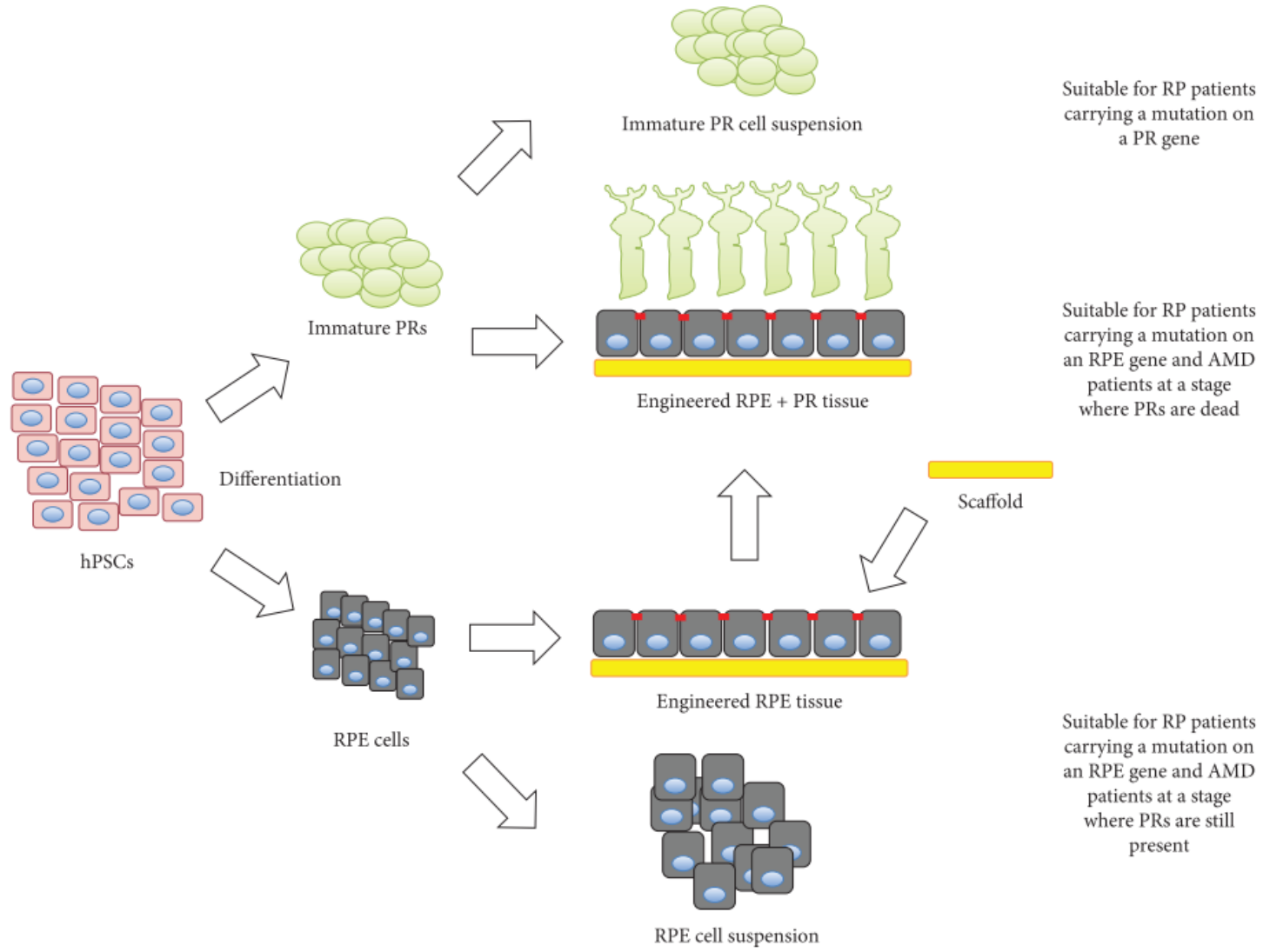
Harris et al. *Molecular immunology,* 2018

Tissue engineering



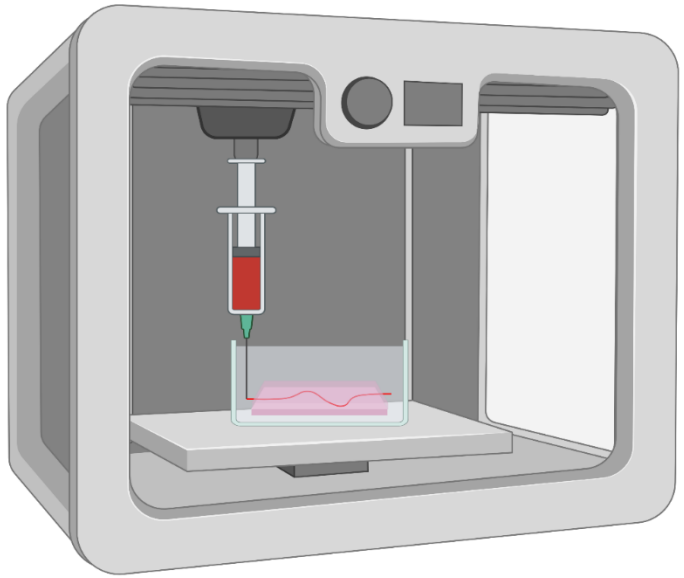
Dvir et al, Nature Nanotechnology, 2011

Tissue engineering of the retina

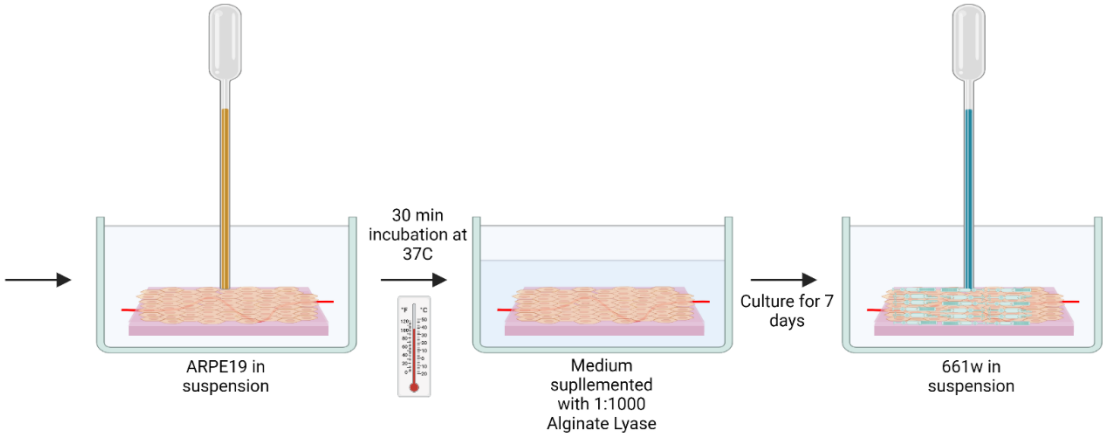


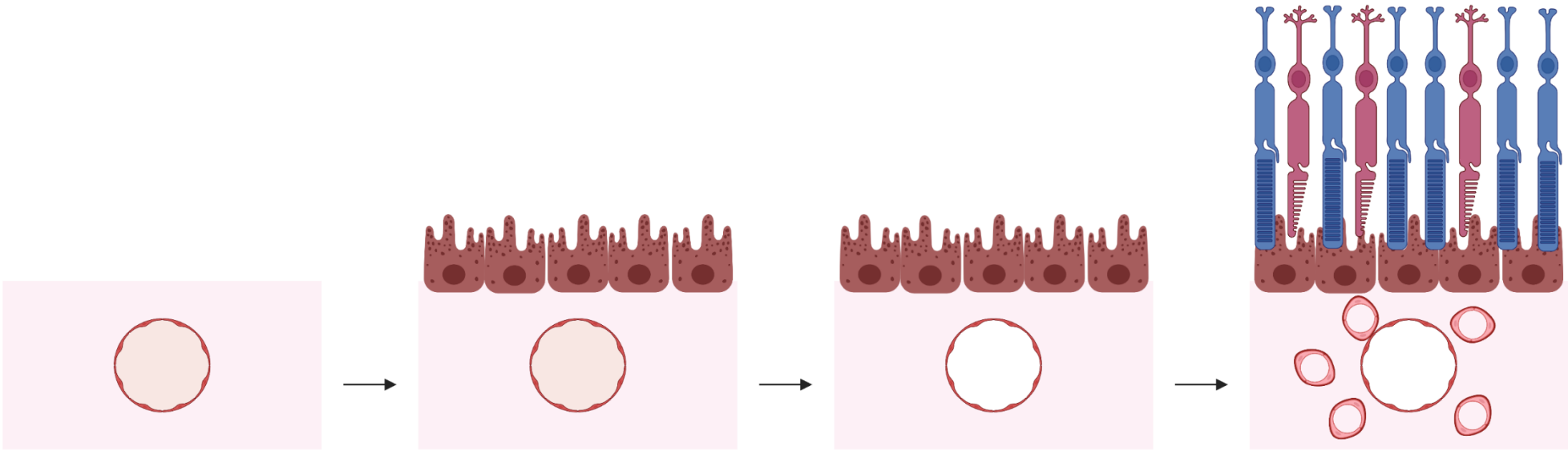
Karim Ben M'Barek and Christelle Monville , Stem Cells International, 2019

Design



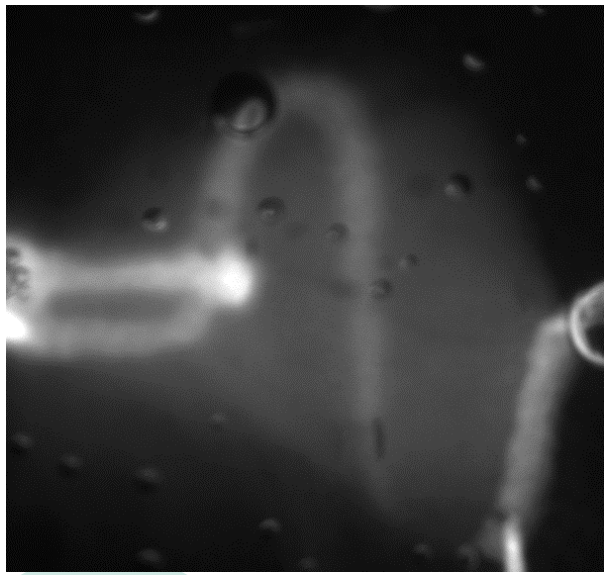
HUVEC in supporting material

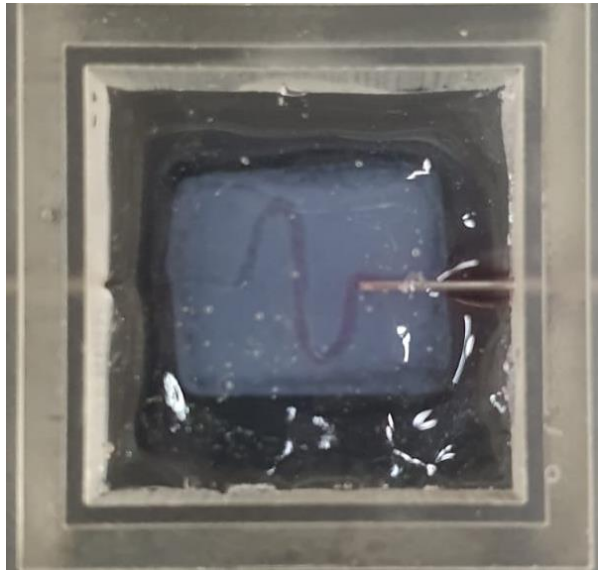


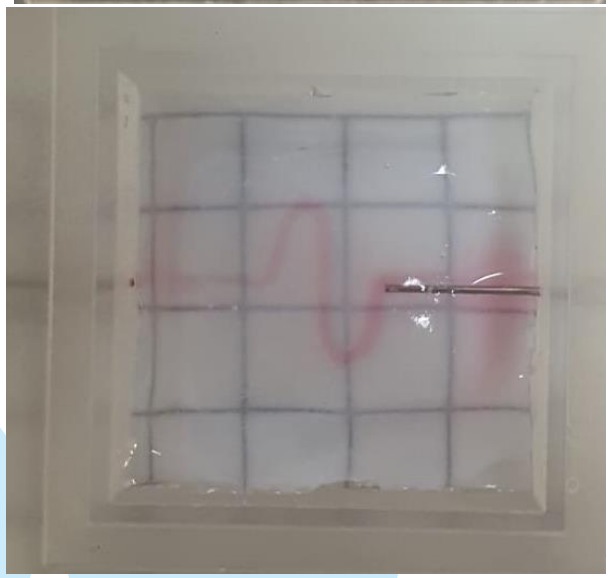


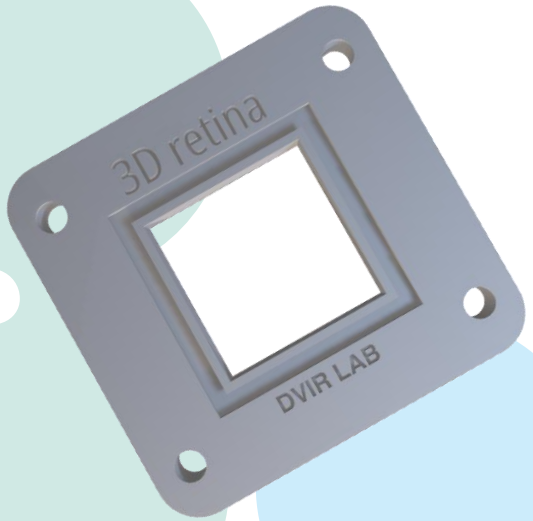
BioRender.com

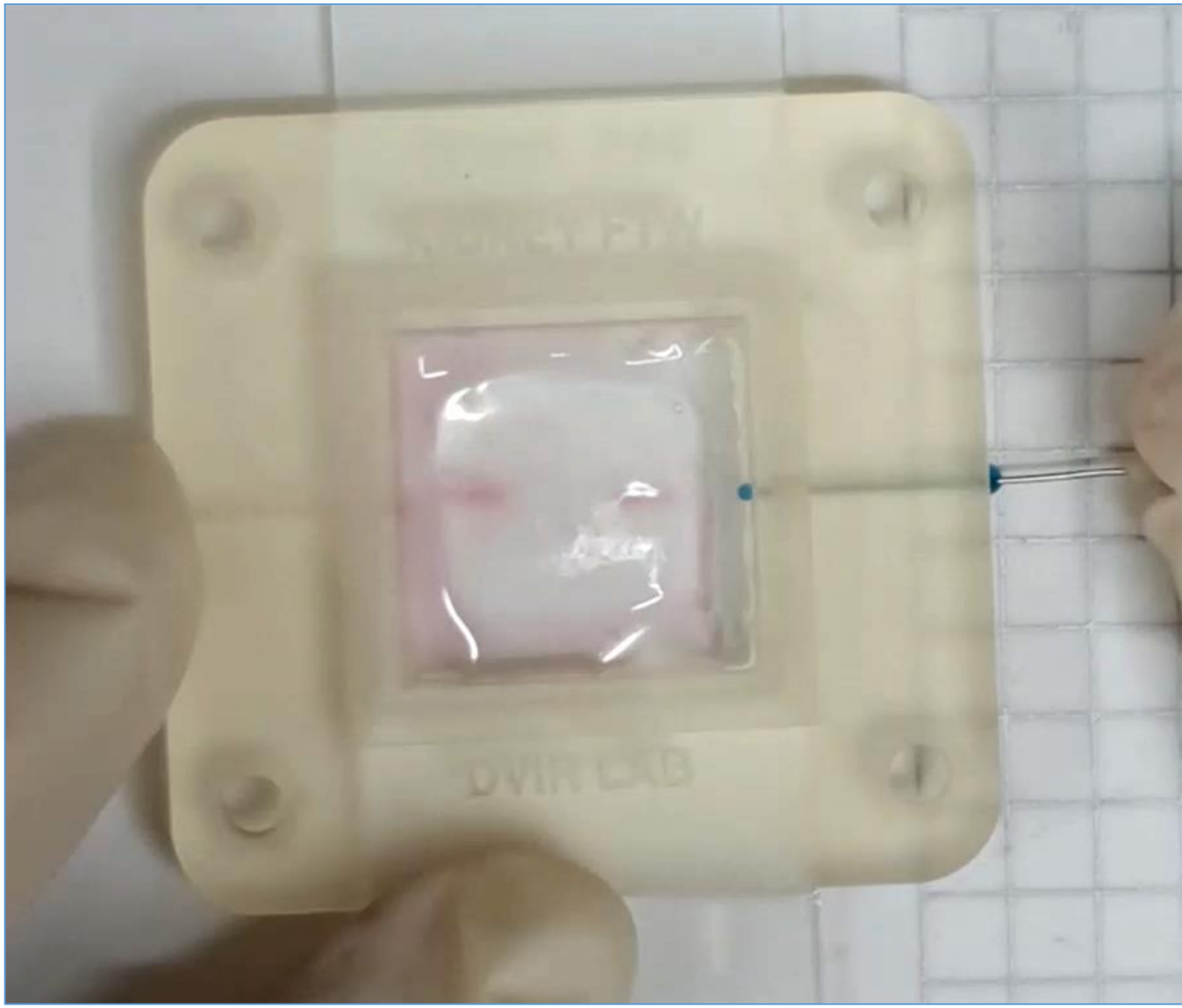
Engineering the blood vessel layer

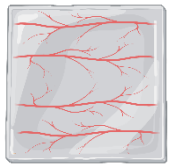




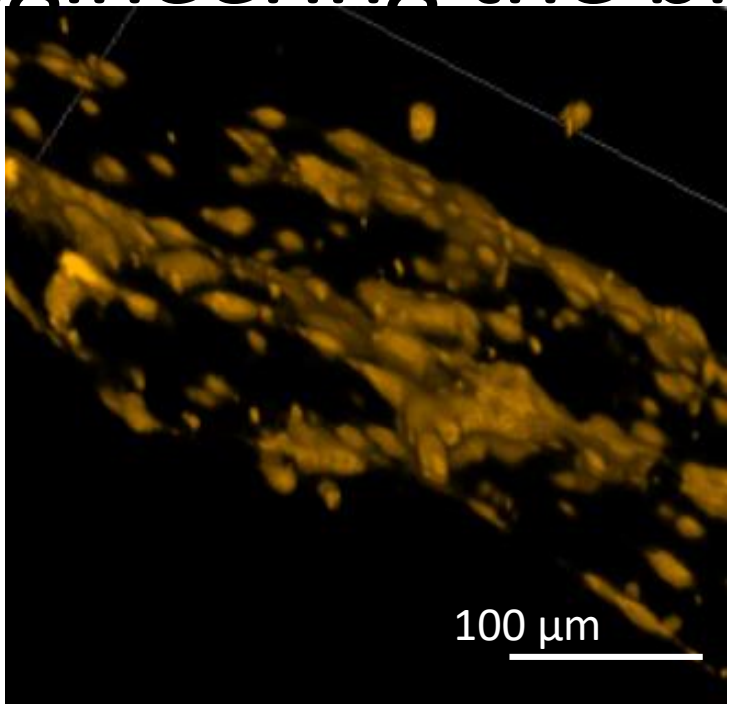


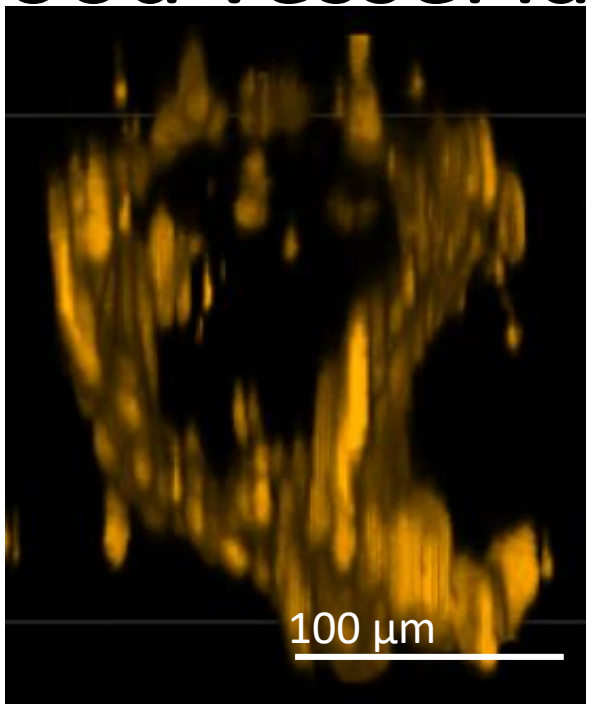


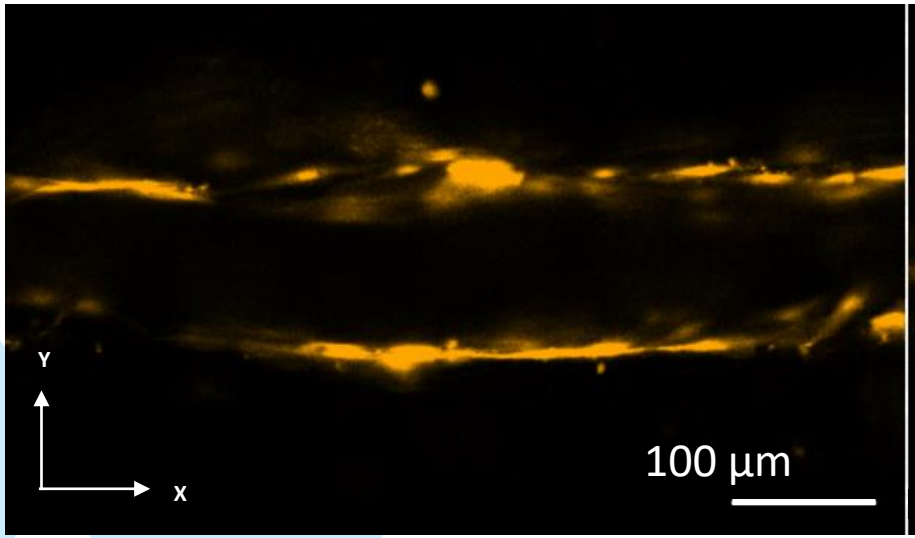


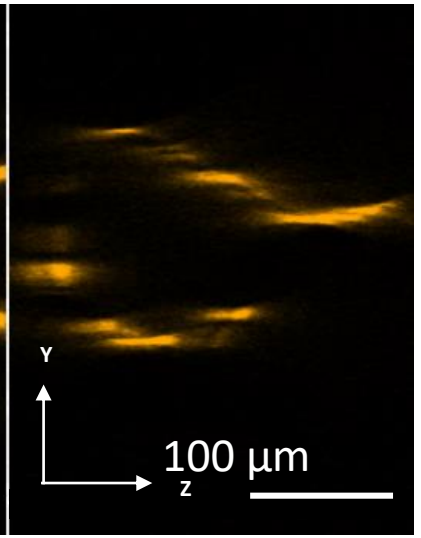


Engineering the blood vessel layer

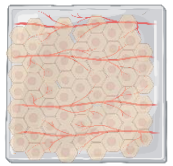






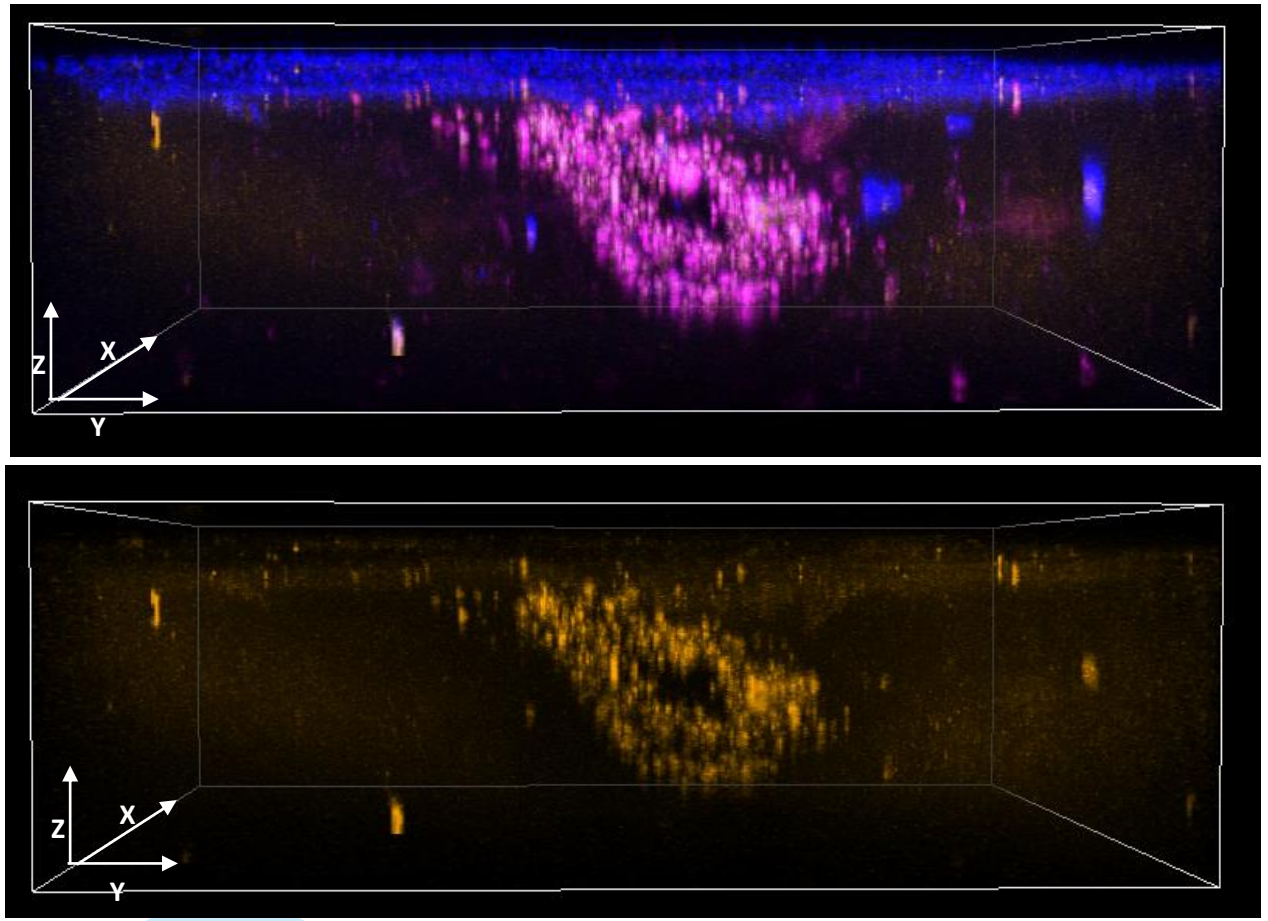


Printed HUVEC (day 14)

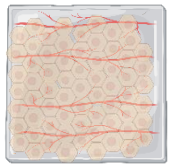


Engineering the RPE layer

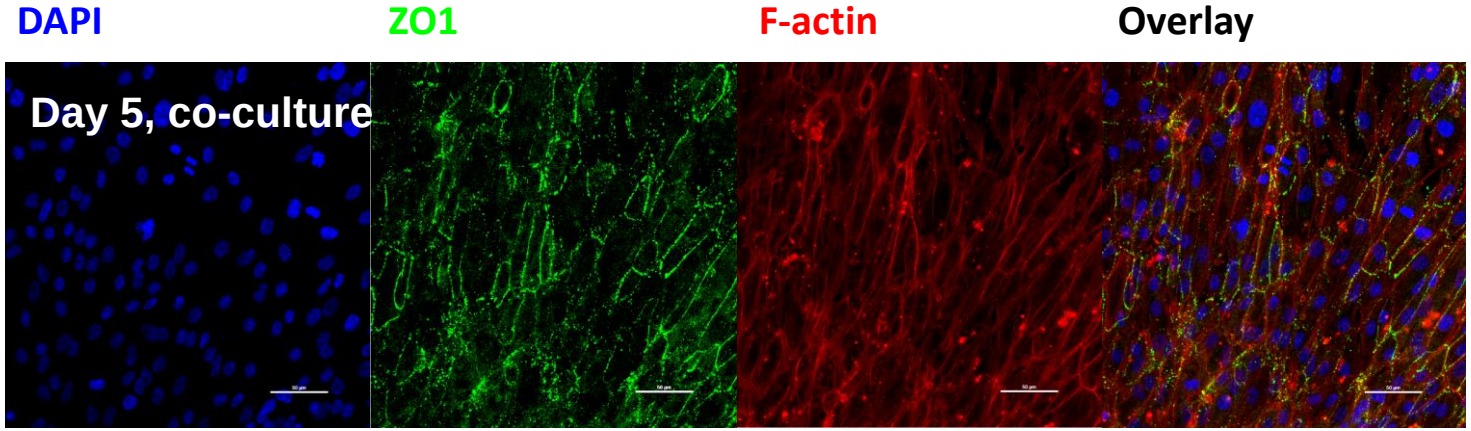
DAPI/CD31/HUVEC-CYTOPAINTER



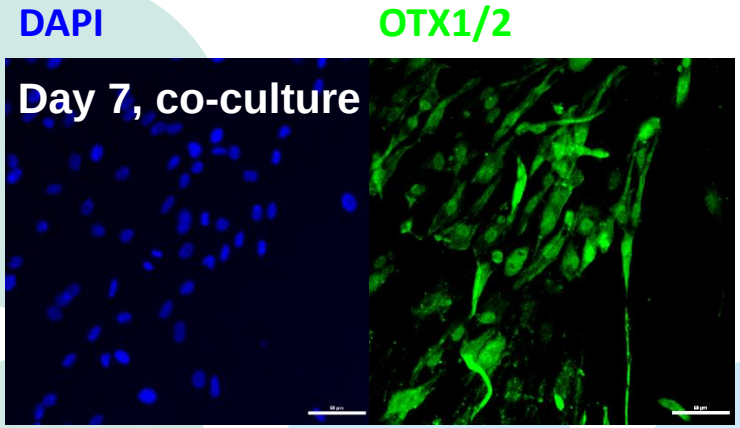
Co-culture of ARPE19 and HUVEC (day 8)



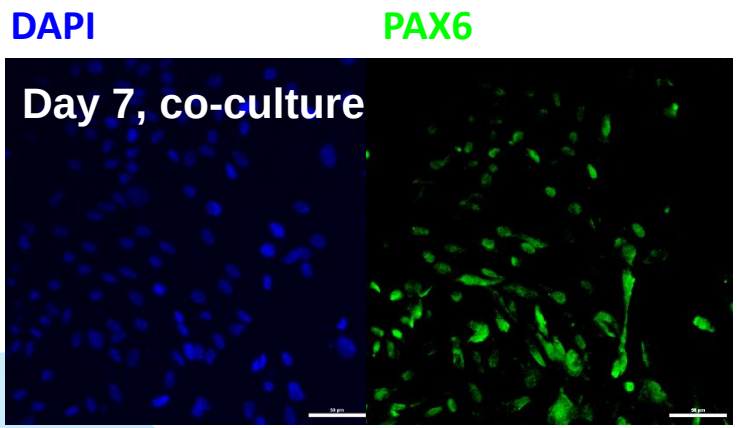
Engineering the RPE layer



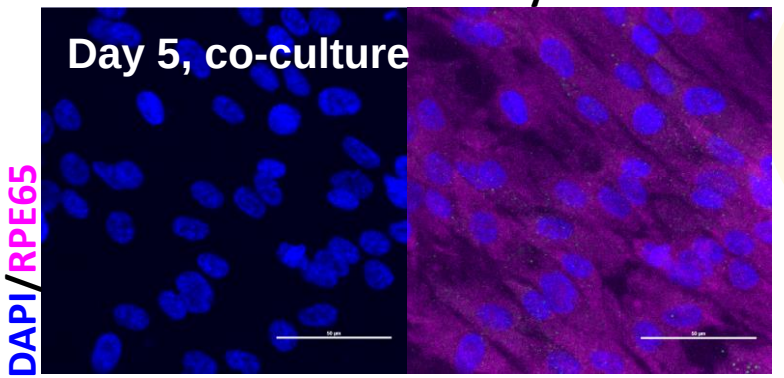
ZO1 expression



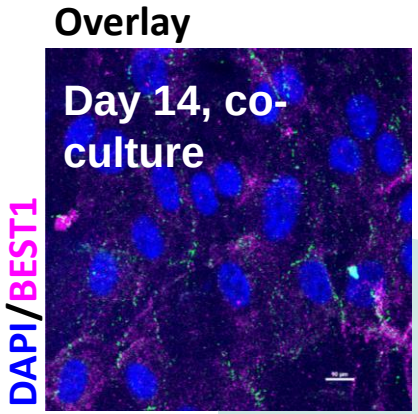
OTX 1/2 expression



PAX6 expression

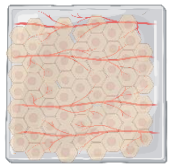


RPE65 expression

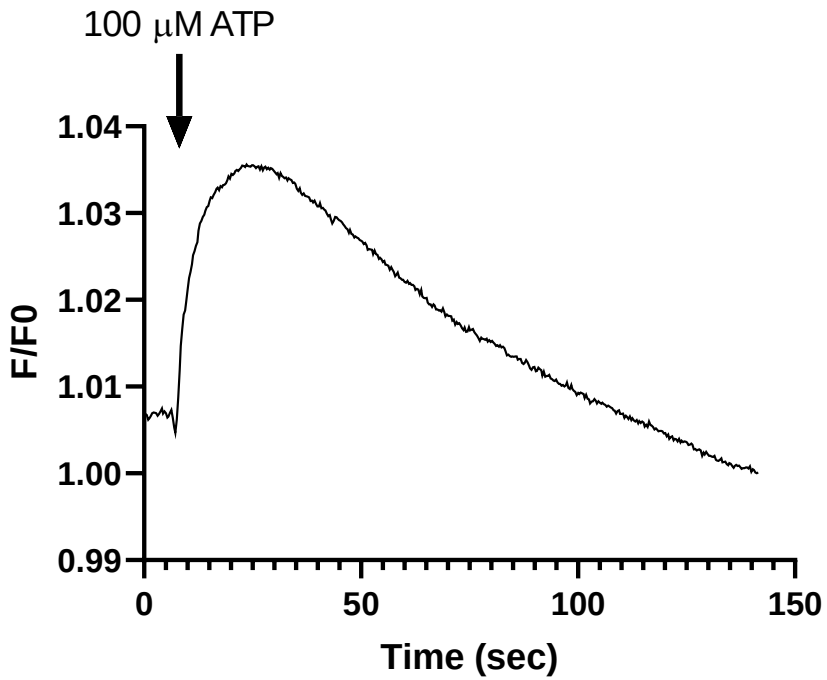


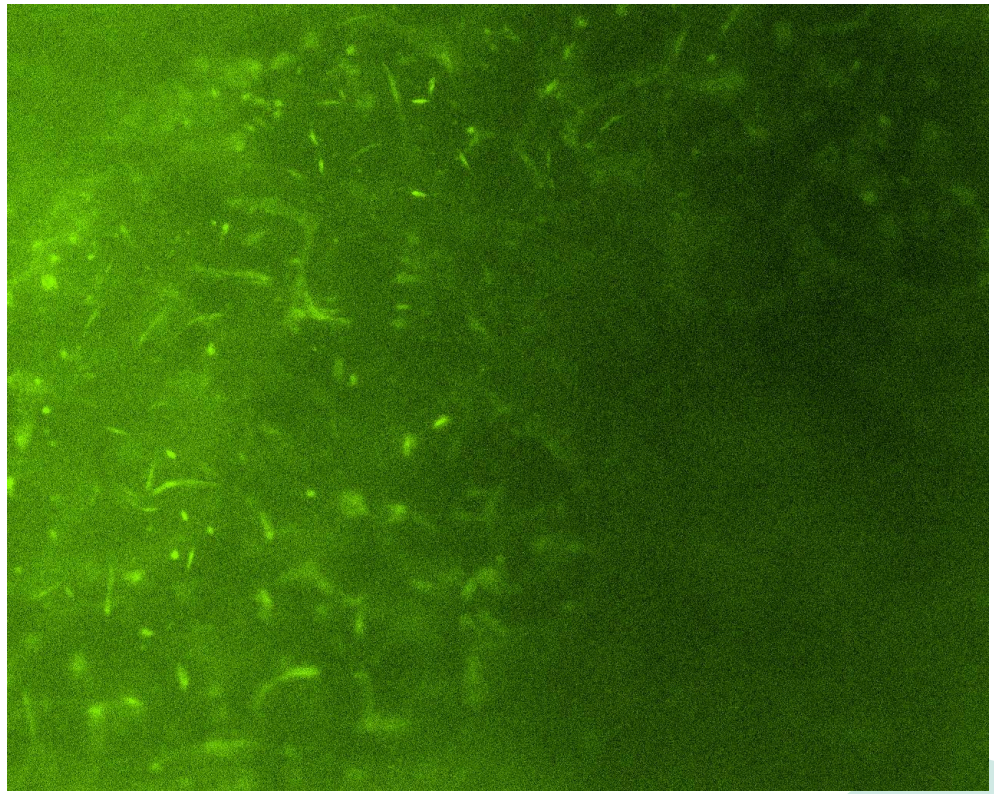
BEST1 expression

Mature RPE markers

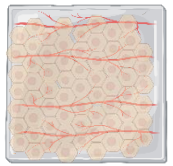


Engineering the RPE layer

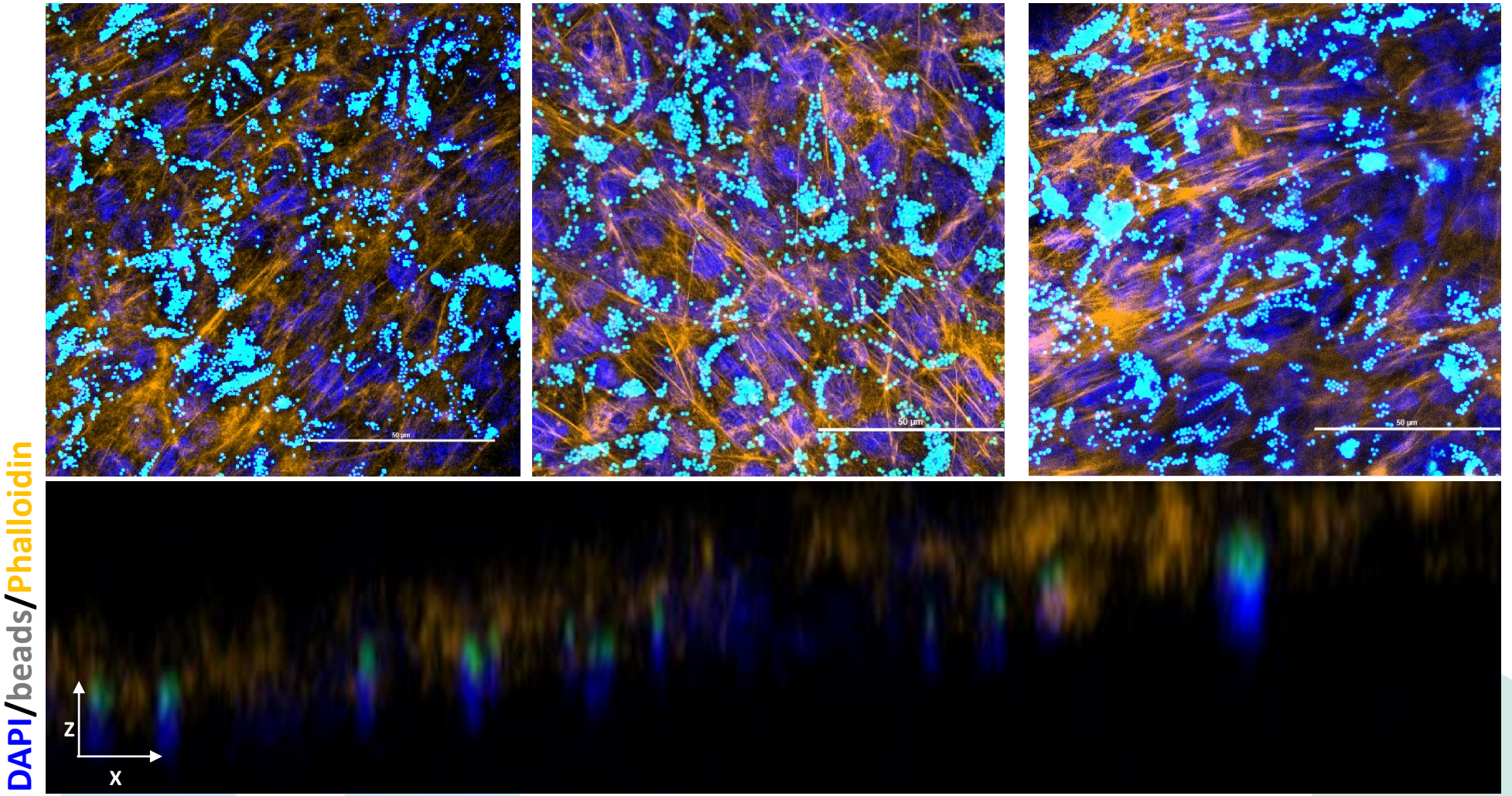




ARPE-19 transport Ca^{2+} in response to ATP after Co-culture with endothelial cells



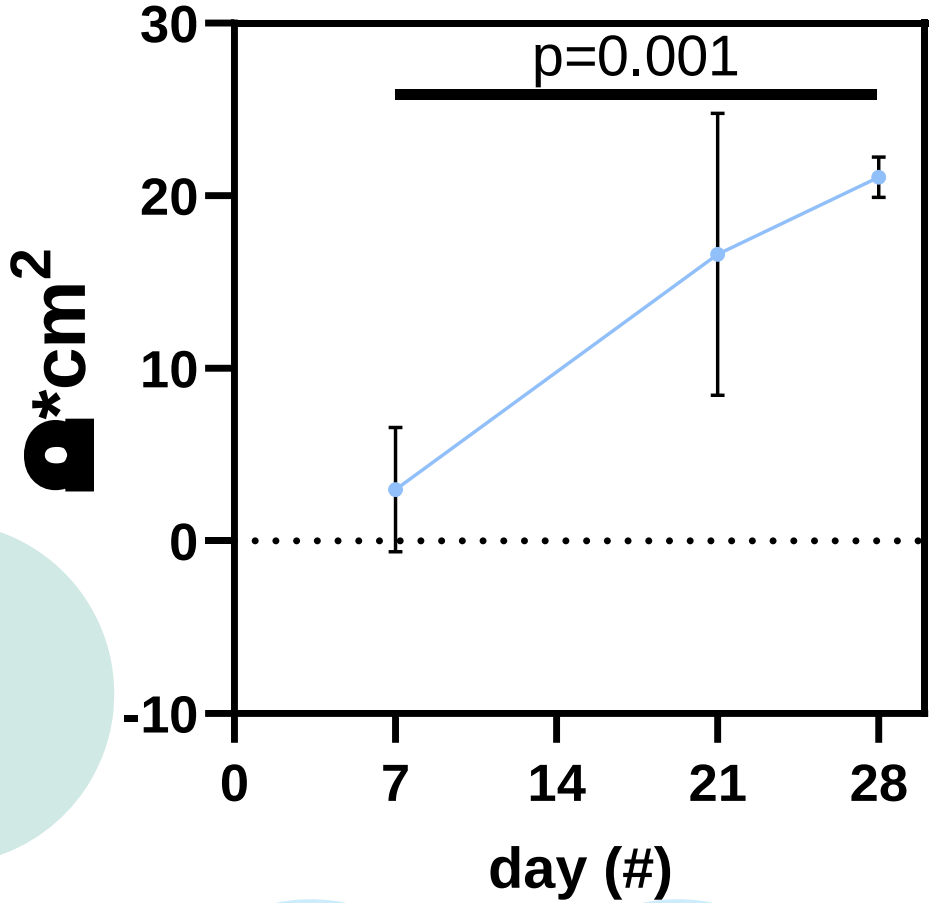
Engineering the RPE layer

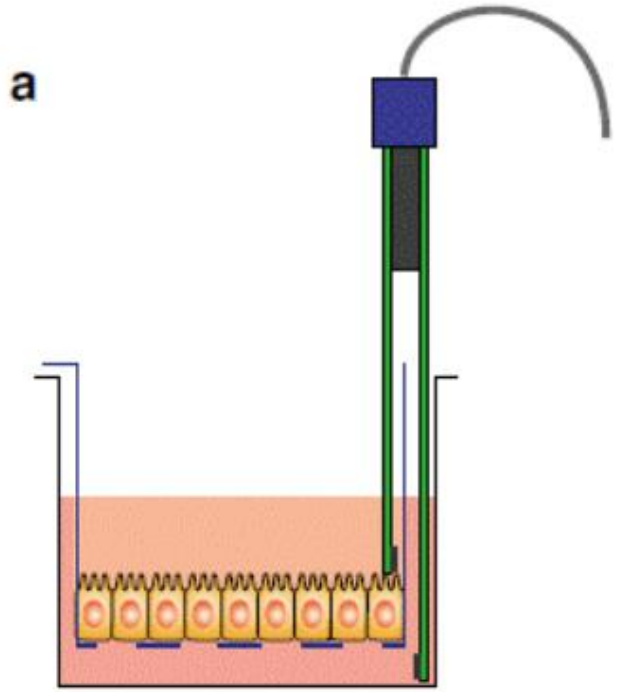


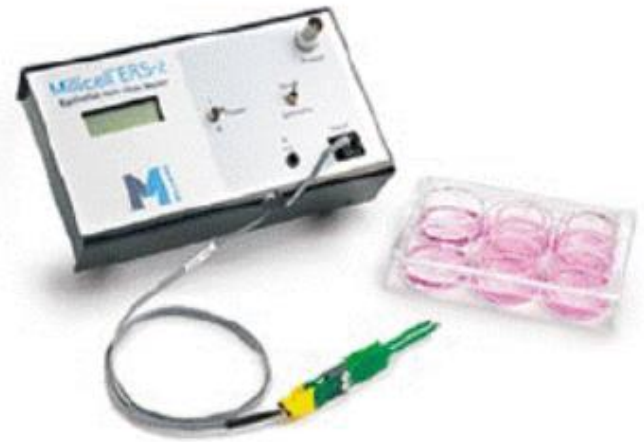
ARPE-19 preform phagocytosis of latex beads after Co-culture with endothelial cells

day 20 phagocytosis of latex beads

Engineering the RPE layer



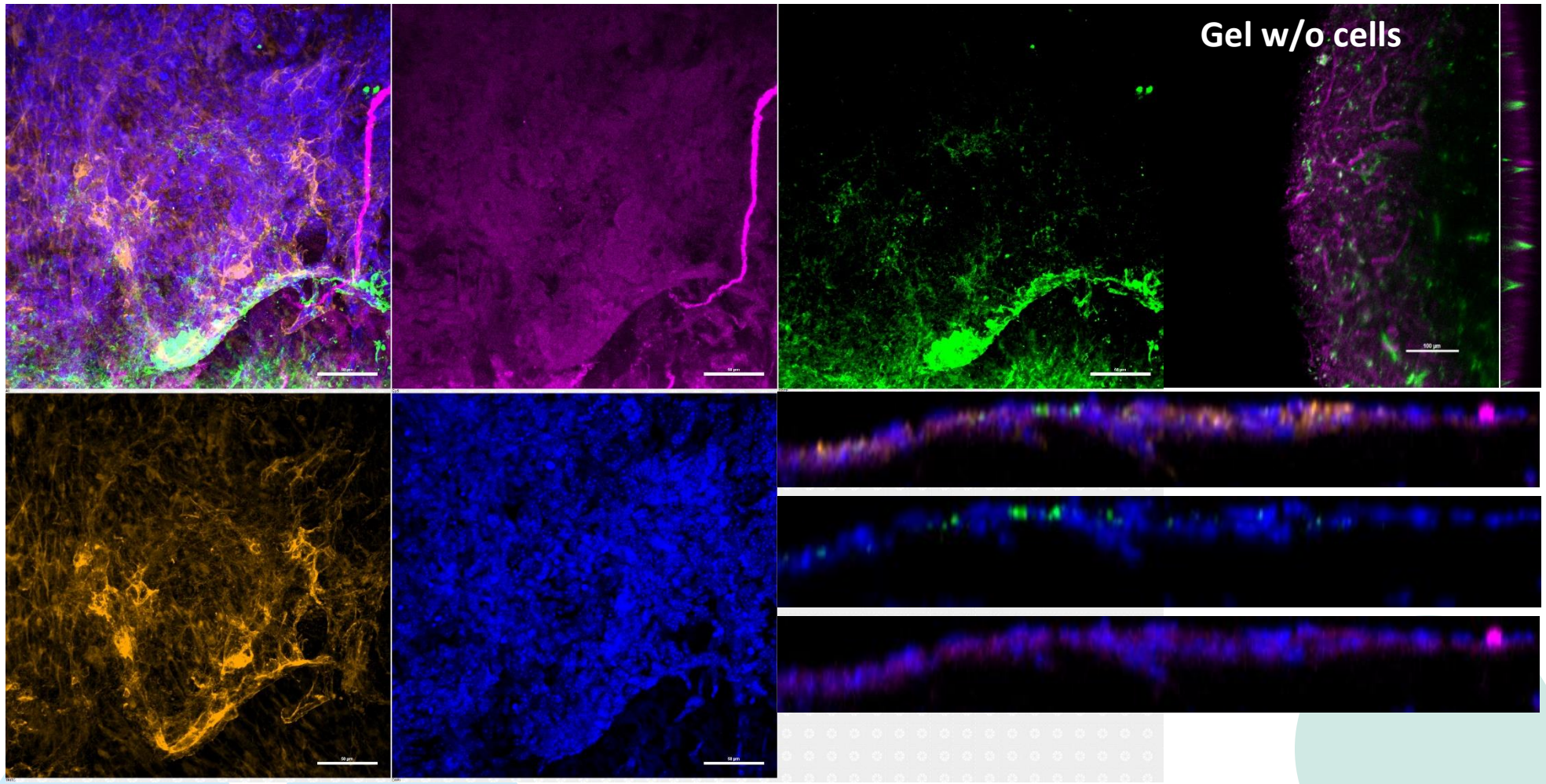




https://ebrary.net/reet_ecnatsiser_lacirtcele_lailehtipesnart_tnemerusaem/htlaeh/24380

ARPE-19 form a barrier on top of the hydrogel

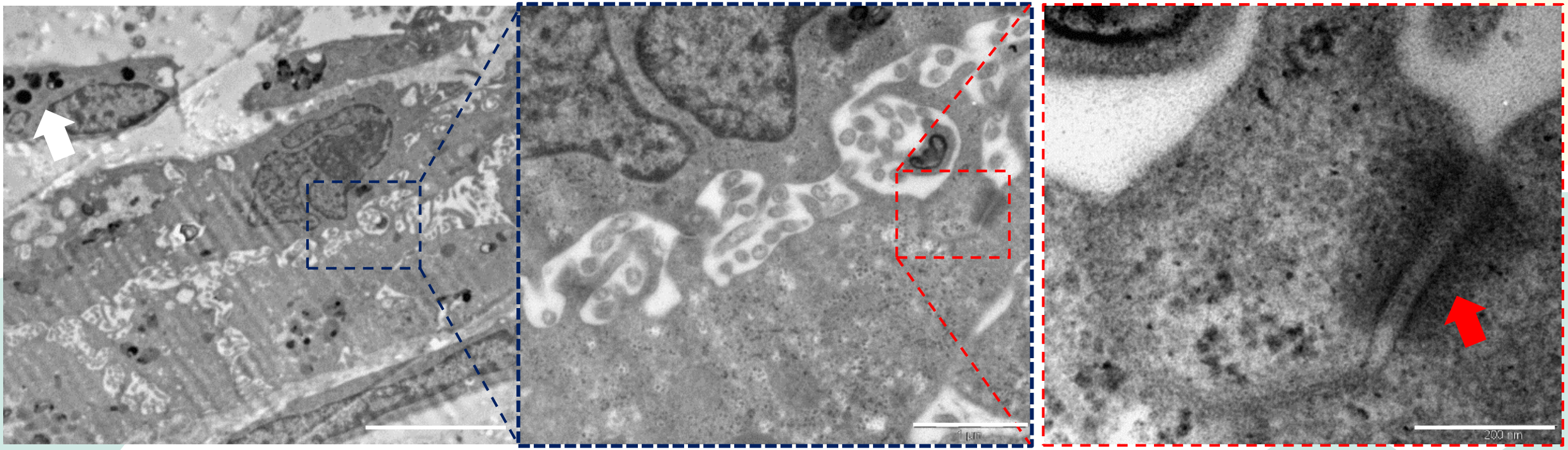
Engineering the RPE layer



RPE cells secret Bruch membrane proteins in the co-culture condition

Co-culture: HUVEC+ARPE19 day 94 + day 81 661w

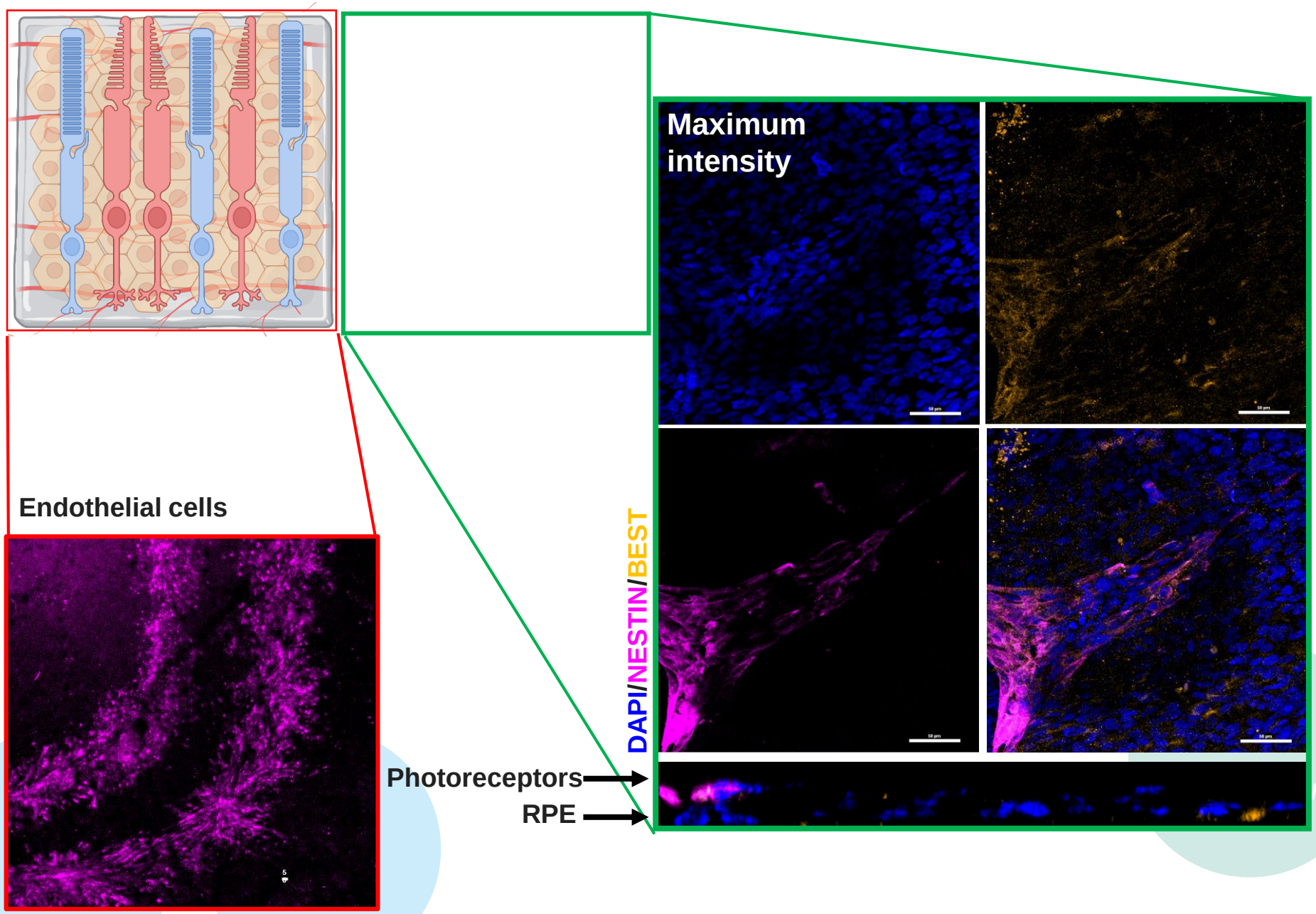
Engineering the RPE layer



ARPE-19 cells display microvilli, pigmentation and desmosomes

Co-culture: HUVEC+ARPE19 day 104 + day 91 661w

Engineering the vascularized retina



Future work

- *In vivo* – show incorporation into the tissue
  - Large animal modal – mini pigs
  - Design of the surgical techniques


















Acknowledgments

In collaboration with the Regenerative ophthalmic lab: Prof. Adiel Barak MD and Dr. Aya Barzelay MD, PhD

Recanati Research Center

Giris Jacob, MD, PhD,

Medicine F

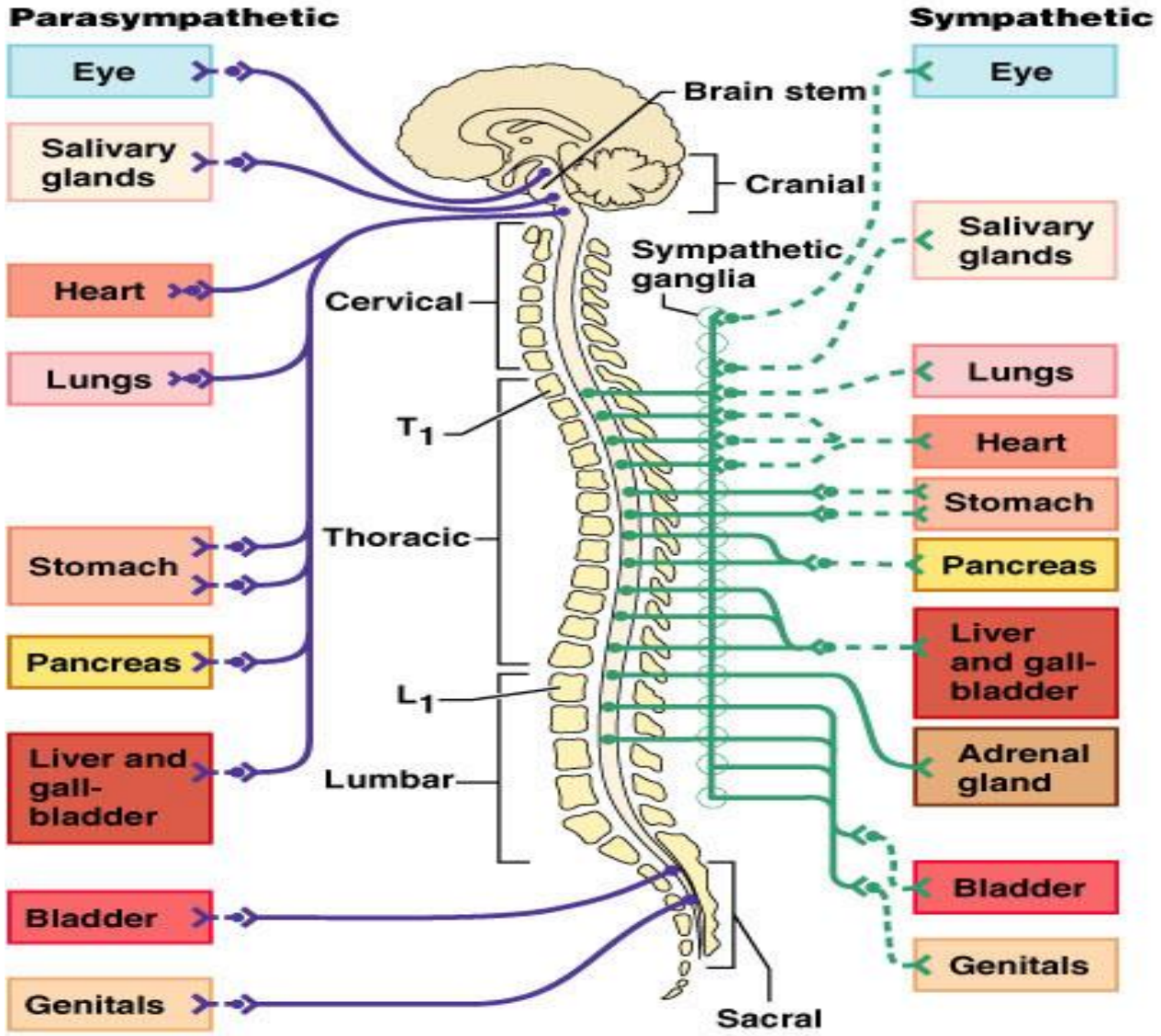
Medicine, Sigol, Physiology, Pharmacology & Clinical Pharmacology

- Autonomic Nervous System
- CV Regulatory Systems
- Flow Regulations
- Hemodynamics, etc.

- Non-Invasive equipments
- Monitorung and signal processing
- Variuos biomarkers Blood Hemostasis
- MRI & (collaborations)

We use pharmacologcal tools to investigate physiologic and pathophysiologic mechanisms

Autonomic Nervous System and Regulatory systems



Essence of our Reseasrch

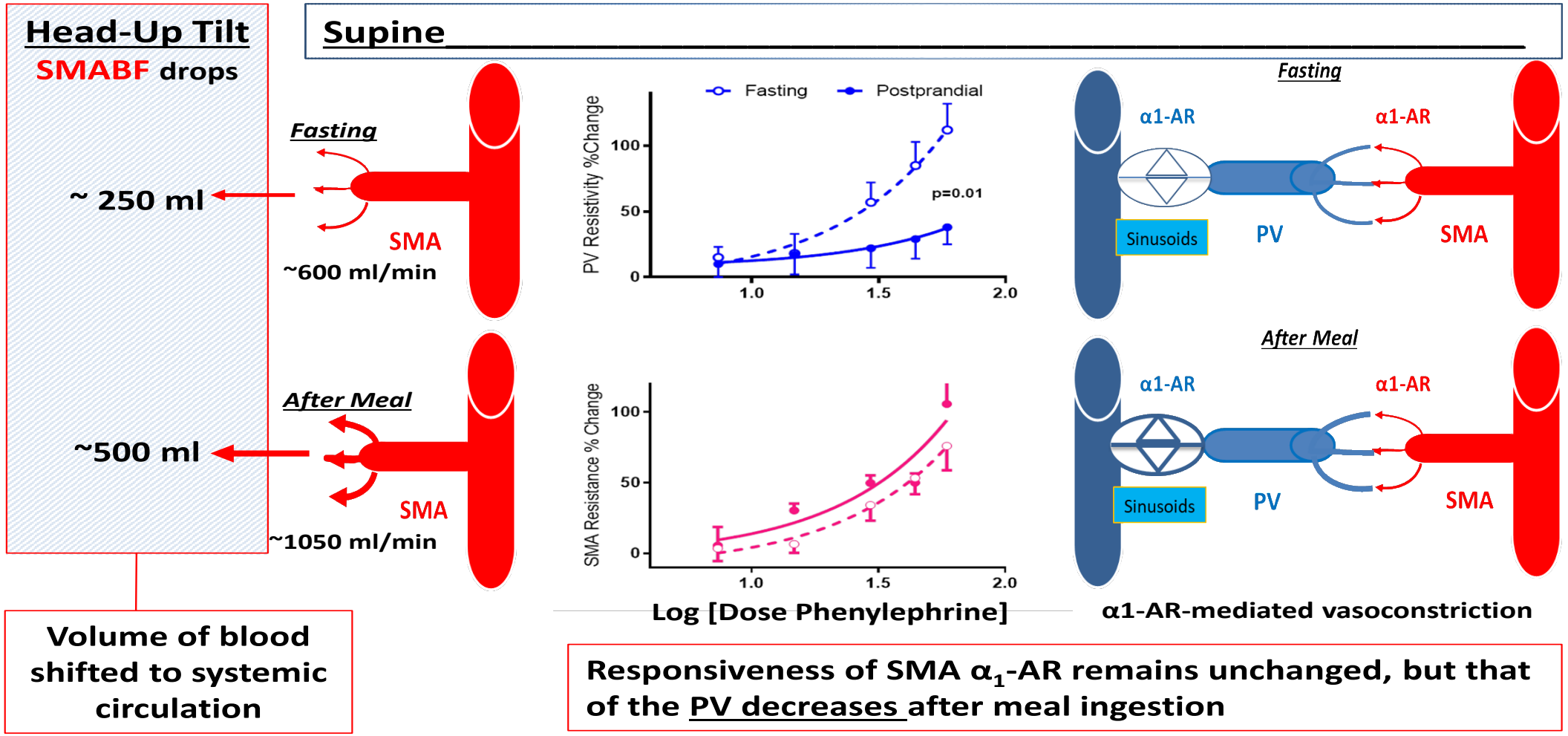
- Translational Science, cornerstone of the basic research in human: **Hypothesis-driven**.
- Understanding mechanistic processes, in physiology and pathophysiology: **Health & Disease**
- Development of new treatment and helpful medical devices: **High Tech**

- Focus, is on cardiovascular regulatory systems, with major "hint" on central and peripheral autonomic nervous system control: on Heart, Mesenteric Circulation and Cerebral regulatory mechanisms (MD, Basic Science)
- **Cannabis** effects on regulatory systems (PhD Student)

Longitudinal View of our outcome:

- Syndormes:
  - Neuropathic Postural Tachycardia Syndrome (POTS), *NEJM*
  - Dysautonomia in Hypermobility Syndrome, *AJM*
  - Dysautonomia in Premenstrual Syndrome, *JCME*
- Mechanisms:
  - Adrenorecptors functions in CVD, *Circulation x*
  - CBF: CO2-NO axis, *Circulation & AJP*
  - Endothelial Function, Brain, Penile, Periphery, AJP, Urol, Circ
  - Coagulation Physiology, effect of ANS, *Hypertension , Hemost & Throm*
  - Cannabis Effects on inhibitory pain, *Neurology*
  - Effect of meals on CV regulatory systems, *AJP*

Effect of meal on mesenteric circulation during orthostasis, and α1-AR responsiveness



AR, adrenoreceptor, SMA (BF), superior mesenteric artery (blood flow), PV, portal vein, sinusoids, venous hepatic sinusoids

Extracellular Vesicles of COVID-19 Patients Reflect Inflammation, Thrombogenicity, and Disease Severity.
Aharon A, Dangot A, Kinaani F, Zavaro M, Bannon L, Bar-Lev T, Keren-Politansky A, Avivi I, **Jacob G.** ***Int J Mol Sci.*** 2023 Mar 21;24(6):5918. doi: 10.3390/ijms24065918.PMID: 36982991

Diagnostic approaches to syncope in Internal Medicine Departments and their effect on mortality.
Galron E, Kehat O, Weiss-Meilik A, Furlan R, **Jacob G.** ***Eur J Intern Med***. 2022 Aug;102:97-103. doi: 10.1016/j.ejim.2022.05.015. Epub 2022 May 20.

Effect of ingesting a meal and orthostasis on the regulation of splanchnic and systemic hemodynamics and the responsiveness of cardiovascular α_1-adrenoceptors.
Zreik F, Meshulam R, Shichel I, Webb M, Shibolet O, **Jacob G.** ***Am J Physiol Gastrointest Liver Physiol***. 2021 Nov 1;321(5):G513-G526. doi: 10.1152/ajpgi.00142.2021. Epub 2021 Sep 15.PMID: 34523347

COVID-19-Associated Hyper-Fibrinolysis: Mechanism and Implementations.
Jacob G, Aharon A, Brenner B. ***Front Physiol***. 2020 Dec 16;11:596057. doi: 10.3389/fphys.2020.596057. eCollection 2020.PMID: 33391014

Vagal and Sympathetic Function in Neuropathic Postural Tachycardia Syndrome.
Jacob G, Diedrich L, Sato K, Brychta RJ, Raj SR, Robertson D, Biaggioni I, Diedrich A. ***Hypertension***. 2019 May;73(5):1087-1096. doi: 10.1161/HYPERTENSIONAHA.118.11803.PMID: 30879357

Cannabis analgesia in chronic neuropathic pain is associated with altered brain connectivity.
Weizman L, Dayan L, Brill S, Nahman-Averbuch H, Hendler T, Sharon H, **Jacob G**. ***Neurology***. 2018 Oct 2;91(14):e1285-e1294.