

# Netherlands Innovation Network

Connecting Innovation Worldwide

Energy System Integration 15 Feb 2022

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Netherlands  
Innovation  
Network

## Whom am I?

- ▶ Innovation Attaché, NL embassy in IL (2016-)
- ▶ EU collaborative research projects (2004-2017)
- ▶ Bioinformatics Unit, Tel Aviv Univ (1998-2005)



Born in NL



Immigrated to IL

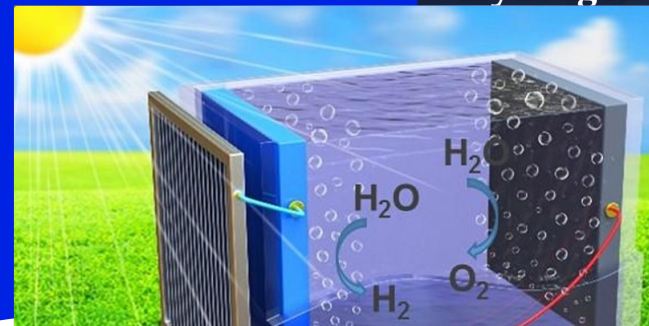
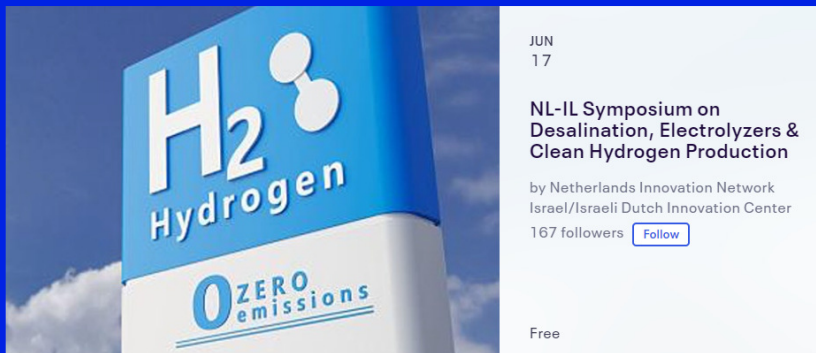


Dutch Israeli H<sub>2</sub> projects



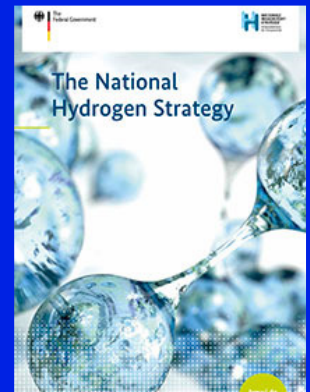
## NL IL Hydrogen activities 2021

- ▶ Basic H<sub>2</sub> course (1-2 Sep 2020)
- ▶ Dutch Israeli Mini Symposia (13 Jan, 2 Feb, 29 April, 17 June 2021)
- ▶ Dutch Hydrogen Valley (H<sub>2</sub>V) Summer School (17-19 August 2021)



## Plans for 2022

- ▶ Speaking engagements for NL hydrogen experts
- ▶ NL IL mini symposia ([YouTube playlist](#))
- ▶ IL delegation to NL (15-20 May 2022)
- ▶ NL Contribution to IL's National Hydrogen agenda



# NL IL mini symposium on Energy Systems Integration

- Intro to System Biology and Energy System Integration parallelism (IDIC)
- System Integration: the foundation of energy transition policy (top sector Energy)
- Local energy management and its advantages for IL (IL Ministry of Energy)
- The Energy System of the Future - To a carbon neutral energy system in the NL in 2050 (GasUnie)
- Energy Resilience in Eilat & Arava (Eilat Eilat Renewable Energy Initiative)
- Reliable Power Electronics for the Energy Transition (TU Eindhoven)
- System integration aspects and GenCell's technology (GenCell)
- Discussion



The poster features logos for IDIC (Israeli-Dutch Innovation Center), a globe icon, and a hydrogen molecule icon. The text includes the event title, date (15 February 2022), location (online via Zoom and YouTube Live), and logos for TOPSECTOR ENERGIE, Ministry of Energy, GasUnie, Eilat Eilat Renewable Energy, TU/e, and GENCELL.

**IDIC**  
ISRAELI-DUTCH  
INNOVATION CENTER

**NL-IL Mini-Symposium on Energy System Integration**  
Date: 15 February 2022 11:00-13:00 IL time / 10:00-12:00 NL time  
Location: Online, via Zoom and via YouTube Live

**TOPSECTOR ENERGIE**  
Empowering the new economy

**Ministry of Energy**  
www.energy.gov.il

**gasunie**  
crossing borders in energy

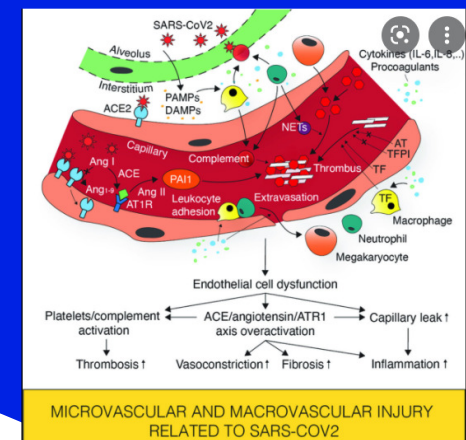
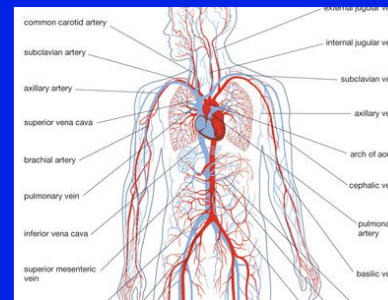
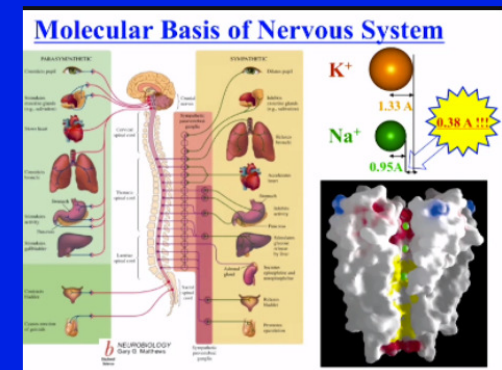
**EILAT EILAT**  
Renewable Energy

**TU/e** Eindhoven University of Technology

**GENCELL**

# Systems Biology

- ▶ Systems biology is the computational and mathematical **analysis, modeling** and **experimenting** of complex biological systems
- ▶ Examples
  - ▶ Neurological system
  - ▶ Cardio-vascular system
  - ▶ Host-pathogen
  - ▶ Plant photo-synthesis



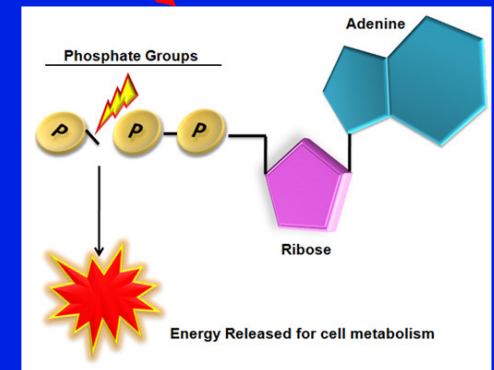
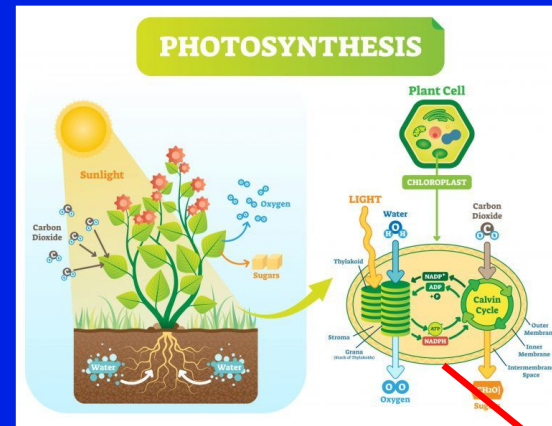
# Photosynthesis and Global Climate Change

- ▶ **depletion** of fossil fuels and the growing demand for food production
- ▶ plant biologists are playing a major role in solving a **grand challenge for the society**, i.e., identifying new ways to **increase plant productivity under a changing global climate**



# Systems Biology – Photosynthesis as example

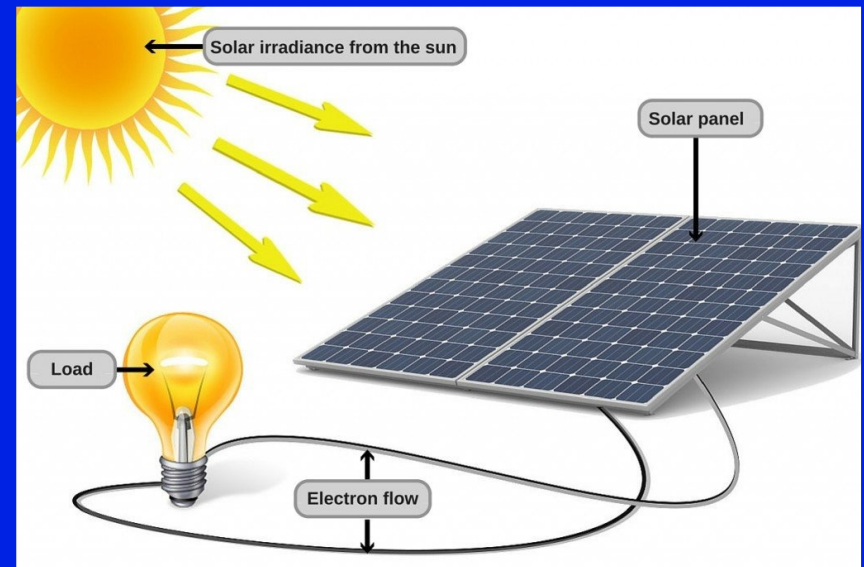
- ▶ Analyze and model understand photosynthetic system (ATP)
- ▶ identify molecular targets to engineer (experiment) for higher productivity





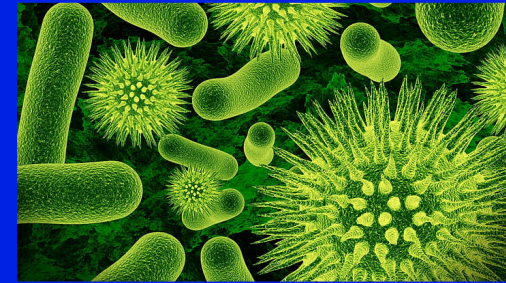
# Systems Biology – Energy Systems

- ▶ The systems approach to generation of green energy is to develop mathematical models, which can faithfully simulate all the processes involved in green energy production, conversion, storage, to engineer for higher productivity and lower costs.



## Systems Biology – Evolution vs. Human

- ▶ In the case of biological systems, it is **nature and evolution** that drove over millions of years the development.
- ▶ In the case of the energy transition, it is us **human**, who **must develop** our global integrative approach.



# NL IL cooperation in Energy System Integration

- ▶ We might learn from each other, and we can learn from nature





## Contact Details

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