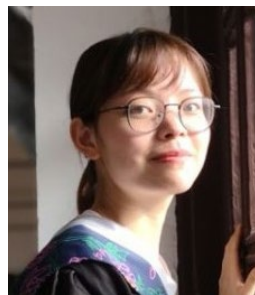




Department of Chemistry & Chemical Biology  
Waksman Institute of Microbiology

Charles Dismukes  
Chemical & Biochemical Catalysis  
2023-2024



Mahak Dhiman  
Postdoc

Hengfei Gu  
Postdoc

Henry Jin  
PhD Candidate

Yifei Li  
PhD Candidate

Shubham Gupta  
PhD Candidate

Chris Turner  
PhD Candidate

Recent PhD Alumni



Shinjae Hwang  
Applied Materials  
Semi-conductor  
Industry

Karin Calvinho  
CTO RenewCO<sub>2</sub>

Anders Laursen  
CEO RenewCO<sub>2</sub>

Apostolos Zournas  
LBNL Postdoc  
Biocatalysis

Recent Collaborators



Todd Deutsch  
Yingying Chen  
Ashlee Vise



Charles Musgrave  
Aziz Alherz  
Aaron Holder  
Zack Bare



Andrew Rappe  
Rob Wexler  
Tian Qui



# MENTORING IMPRESSIONABLE MINDS

## Undergraduate Students & Alumni (Last 3 years)



Alexander Kim



Sofia (Max) Dvinskikh  
Yale



Ajay Kashi  
Opus12



Edward Izett  
Opus12



Kyra Yap  
Stanford



Sunjay Melkote  
Stanford National Lab



Devan Solanki  
Yale



Lauren Ostopowickz  
Arizona State



Anika Jalil  
UC Santa Barbara



Tim Goetjen  
Northwestern



Jonah Williams  
McDermott



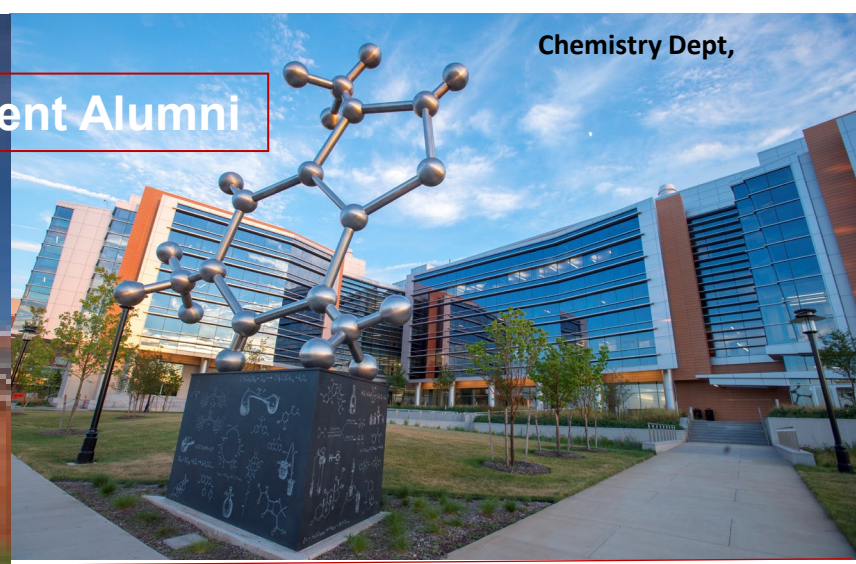
Jack Weber  
Columbia


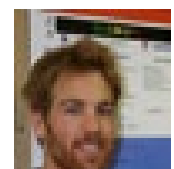













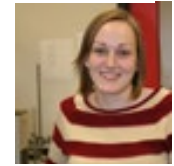







# Employment of Recent Alumni



2020



 JOULE Biotechnologies						 JOULE Biotechnologies				
McKinsey &	LSU faculty	Loyola faculty	S.V. Start up	ABT Analytics	JBI-LBNL	RenewCO2 startup	RenewCO2 startup	Semiconductor Industry	Princeton U. Postdoc	
 NREL NATIONAL RENEWABLE ENERGY LABORATORY	 NREL NATIONAL RENEWABLE ENERGY LABORATORY		 JOULE Biotechnologies							
AI-G, LLC Portugal	ExxonMobil	Petrochem Industry	Semiconductor Industry	RU Startup	Faculty Valparaiso Univ	Opus 12 Start up				

## Our Recent Funding Agencies



DOE-BES  
DOE-EERE  
DOE-AMO





2024

# Charles Dismukes

Chemical & Biochemical Catalysis



## Energy for an overcrowded planet

*Department of Chemistry & Chem Biology*

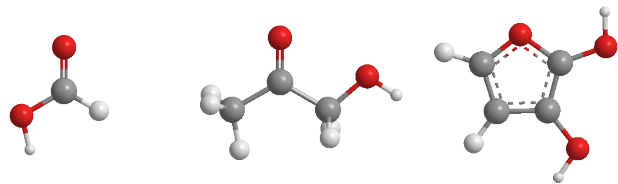
### Electro-Catalysts for Water Oxidation

-H<sub>2</sub> from water

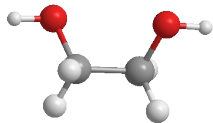
### Electro-Catalysts for CO<sub>2</sub> Conversion

Carbon-Negative Synthesis from Scratch

-2018



-2023



-2024 Polycarbonates for CO<sub>2</sub> Removal

## Food for an overcrowded planet

*Waksman Institute of Microbiology*

### Improving Photosynthesis in Vivo:

-Chokepoints in the PETC

### Chokepoints in CO<sub>2</sub> Carboxylation:

-RuBisCO/ Calvin-Benson Cycle

### Catalysis by Photosynthetic Enzymes:

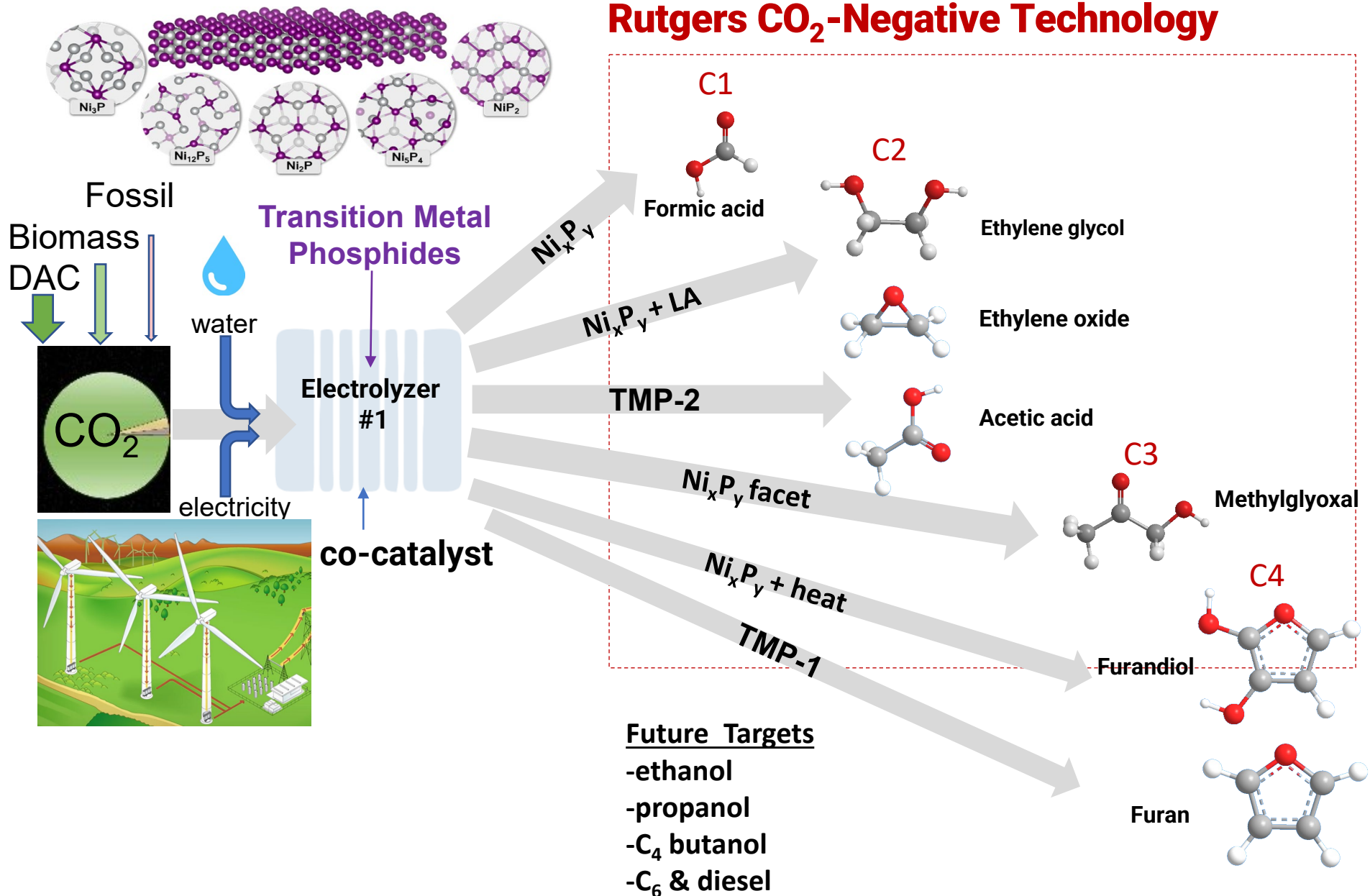
-Photosystem II/Water Oxidation

Rutgers Startup  
from 5 RU patents

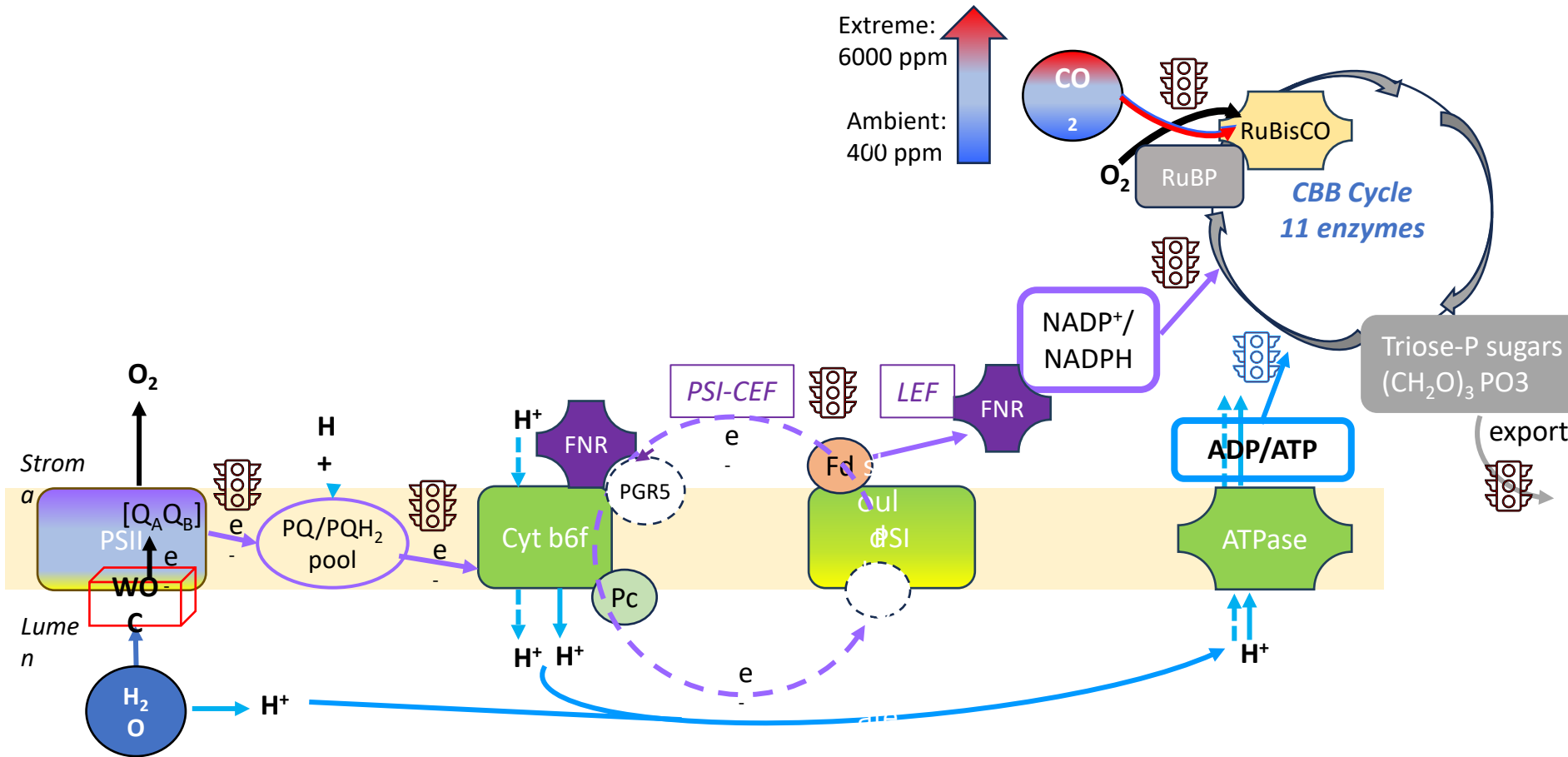


# Carbon Negative Chemicals & Fuels from Scratch

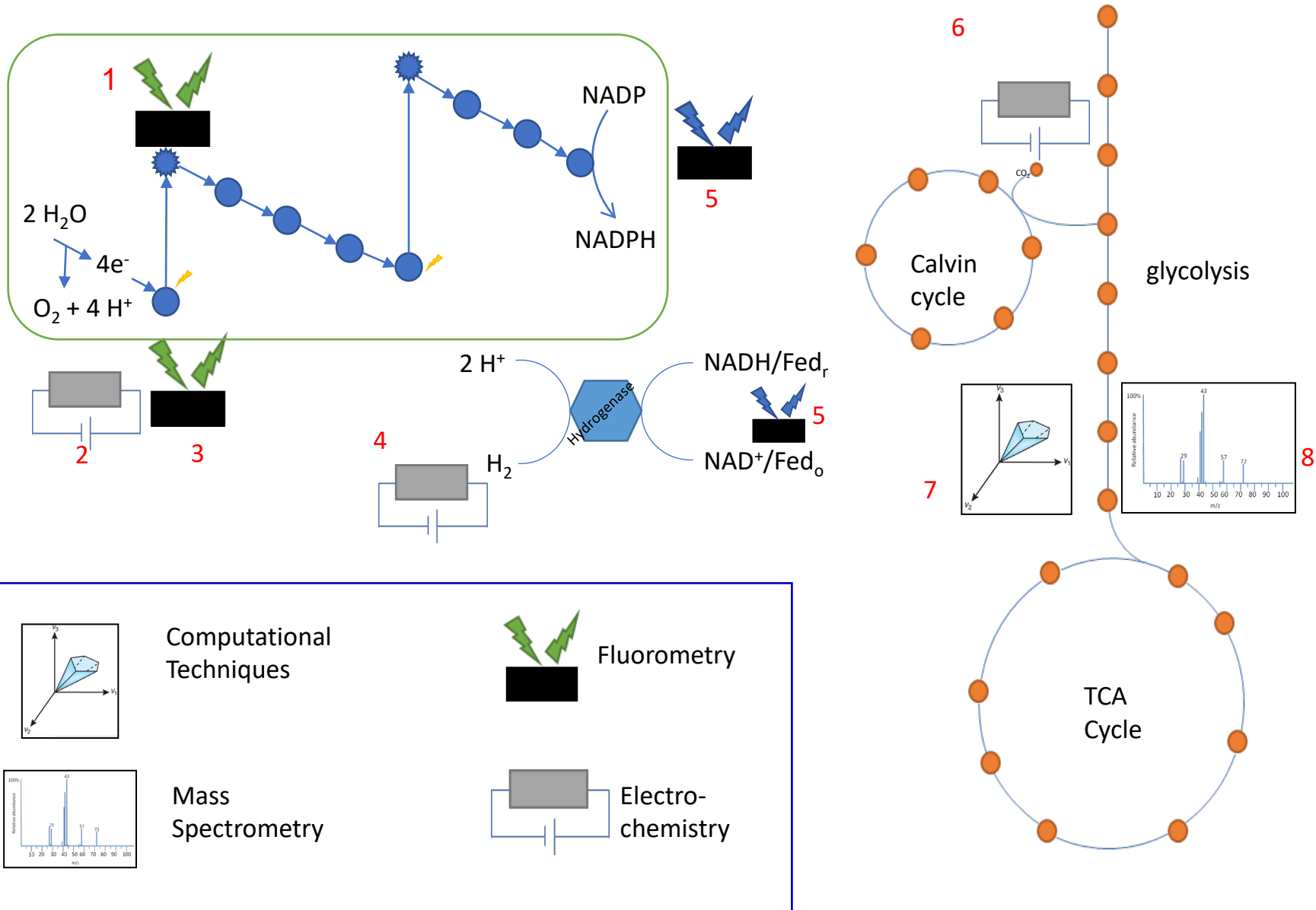
## Rutgers CO<sub>2</sub>-Negative Technology



# Bottlenecks in Photosynthetic Reactions that Limit Biomass Production



# Dismukes Waksman lab analytical toolbox



Powerful tools developed in our laboratory offer unique insights into biology