Marmara University Faculty of Engineering
Department of Bioengineering

SEMINAR

October 7, 2022
09:30-11:00
Marmara University,
Engineering Faculty, M2 Building
Aydınevler, Istanbul
M2-Z08 Seminar Hall

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- Curriculum Vitae

2019 – 2022	**Post-doctorate under the supervision of Prof. Milo.** Department of Plant and Environmental Sciences, Weizmann Institute of Science, Rehovot. **Funding**: SAERI postdoctoral fellowship (Sustainability and Energy Research Initiative - Weizmann Institute of Science) for a period of 3 years
2015 – 2019	**PhD student in neurosciences directed by Dr. Girault**. Fer à Moulin Institute, Inserm/ Sorbonne University, Paris. Obtained with "Félicitations du jury à l'unanimité". **Fundings**: **3-year doctoral fellowship** obtained from ENS Paris-Saclay and **grant for a fourth year** of PhD obtained from the Fondation pour la Recherche Médicale (FRM).
2015 – 2018	**Experimental biochemistry & molecular biology teacher.** Sorbonne University.
2015	**Master's degree in Biochemistry & molecular biology.** Sorbonne University. *Summa cum laude*.
2014	**Agrégation BGB (Biochemistry – Bioengineering).** Civil service competitive examination for the public education system. Rank: 7th over 359 candidates.
2011 – 2015	**Normalien student at École Normale Supérieure Paris-Saclay.** Selective school (15 civil servant "normalien" student recruited over 600 candidates) training researchers and university teachers.

RuBisCOlympics: searching for the fastest RuBisCO in the biosphere

Carbon fixation is the process that supplies our food and stores energy in the living world. Ribulose-1,5-bisphosphate carboxylase/oxygenase (RuBisCO) is the most abundant enzyme in the biosphere and the primary catalyst for autotrophic carbon fixation. Its relatively slow catalytic rate and lack of specificity make it an attractive target for improving the efficiency of carbon fixation. Previous attempts to improve RuBisCO catalytic function have had very limited success, yet those efforts were centered on a tiny fraction of the diversity of RuBisCO across the tree of life. Thanks to recent advances in technology, we are now able to sequence, synthesize and test a much larger space of natural RuBisCO variants. We therefore developed an experimental platform to scan catalytically superior variants by systematically mining genomic and metagenomic data. By exploring ≈400 unique RuBisCO sequences from the so-called type II and type II/II RuBisCOs, we have already identified a RuBisCO harboring a turnover sixfold faster than the median plant RuBisCO and nearly twofold faster than the fastest measured RuBisCO to date. We are now extending our search to screen ≈5,500 prokaryotic type I RuBisCOs, a very promising group containing fast carboxylating RuBisCOs from cyanobacteria. Identification of RuBisCO variants harboring auspicious kinetic parameters will pave the way for increasing plant productivity and for the development of alternative low-cost biofuels.