

for Biological Discovery

Make Life Better™

The Artificial Intelligence enabled Operating System for Biotechnology. The TeselaGen[®] operating system connects biologists, lab technicians, and bioinformaticians so that they can collaboratively design and build experiments, organize and standardize data, test and continually learn. Our modern approach, coupled with artificial intelligence modeling, has opened the door for a radical transformation of biology and chemistry, enabling rapid expansion of potential applications.

TeselaGen's founding team met at Stanford while working on problems in computational and molecular biology. The team includes an elite group of engineers, biologists and physicists from Stanford, Cal, MIT and Harvard with wide experience in synthetic biology, molecular biology, automation, artificial intelligence, software development, and business development. TeselaGen has been now deployed by a number of small startups, Fortune 50 companies, as well as emerging innovators in biopharmaceuticals, agriculture, and specialty chemicals.

Reduce cost and time to market.

Our Artificial Intelligence-enabled operating system radically accelerates product development of therapeutics, high value chemicals, and agricultural products. TeselaGen has demonstrated that it can increase the design and build speed, as well as reduce the costs associated with research & development, by an order of magnitude.

TeselaGen as your Operating System for R&D.



Why TeselaGen?

Large and small companies that participate in the bio-economy are replacing traditional methods with modern biotechnology and machine learning driven techniques. This is opening the door for a radical transformation of biology and a rapid expansion of potential applications. This increased demand requires a secure, scalable, interoperable, protocol-driven platform that can span multiple users working on multiple projects across large, geographically distributed organizations.

> The four pillars of our system

- **Design Management:** From DNA to protein design, to the most advanced large scale combinatorial and hierarchical designs that use state-of-art synthetic biology approaches for product development, our design tools help you design complex libraries that can get built quickly in the lab.
- Lab Management: A fully integrated laboratory management system that knows how to talk to you and your robots. Our system can orchestrate workflows, hands off to automation, manages samples, freezers and inventory, coordinates inventory and purchasing, guides quality control, and keeps track of everything you need to apply machine learning to optimizing your product.
- **Data Management:** All too often, data is scattered and isolated in places that make it hard to find and difficult to use. Our system provides a connected resource that acquires data from analytic and monitoring equipment and brings it together, links it to your design-build process, transforms it and makes it ready for analysis, predictive modeling, and machine learning.
- Intelligence: teams can combine their knowledge and data with AI algorithms built to understand biology leading to new, high performance bio based products faster than ever before. Our AI models allow you to converge on an optimal product ten times faster then using traditional approaches.



Deploy powerful machine learning models

Predictions

Use TeselaGen Predictions to estimate a quantity for all untested combinations of the variants in your experimental data.

View all predictive models

New predictive model 🕀

Evolutions

Exploit your experimental data with TeselaGen Evolutions to find out which are the most likely set of strains that will improve the performance at your next experimental round.

View all evolutive models New ev

New evolutive model 🕀

Our platform implements advanced deep learning techniques to model biological entities, and to optimize synthetic constructs of DNA, proteins, and other biomolecules.

 Train our own off-the-shelf models, or integrate our operating system with your own algorithms.

Generations

TeselaGen Generations is a simple, fast and scalable alternative for biomolecule discovery. Find new molecules by learning from examples with Deep Learning Generative models.

In Notice: Currently, generative models only support training sequences of 10 to 50 amino acids. Only IUPAC 20 amino acids are supported.

View all generative models

New generative model 🕀





Train predictive models



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PA_2	CA_4	PB_2	CB_1	PC_1	GC_4	2.25116738
PA_I	04_1	PB_1	GB_1	PC_1	GC_2	2.46021807
PA_2	GA_4	PB_2	GB_2	PC_2	GC_1	2.47347838
PA_1	GA_4	¤B_2	GB_1	PC_1	GC_4	N/A
PA_1	GA_1	PB_2	OB_5	PC_1	GC_2	N/A
PA_2	GA_4	PB_J	OB_1	PC_1	GC_4	N/A
PA_1	GA_1	PB_1	GE_3	PC_1	GC_2	2.28776284
PA_2	GA_3	PB_1	GB_3	FC_1	GC_1	2.36111899
PA_2	G6_1	PB_3	GB_1	PC_1	GC_2	N/A
PA_1	GA_1	PB_1	GB_3	PC_2	6C_4	2.3089679
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- We implement predictive models that can be used to predict target values based of quantitative or qualitative inputs.
- These predictive models can be used to predict the phenotype of different biological products, such as the binding affinity of an antibody or the titer of a metabolite.
 - Biological and chemical entities can be highly dimensional but can be mapped to an embedding space. We implement **different embeddings to represent DNA molecules, proteins, and chemical compounds,** to efficiently train predictive models.



Generate peptide leads



- Our generative models can be trained to learn the probability distribution of the molecules in a training dataset, and then used to sample it and generate new leads that follow the same distribution.
- We have shown that by using some generative models we can capture the desired properties of certain peptides or protein domains.





Run evolutive models





- We implement bayesian optimization techniques to recommend new experiments based on empirical data gathered in the lab.
- Our evolutive models can use other pre-trained predictive models as surrogate models.
- Evolutive models can also be used with pre-trained generative models, when exploring highly dimensional design spaces.





Some Partners using TeselaGen







Technical University of Denmark



"In collaboration with TeselaGen, at DTU we have used machine learning models to generate new design recommendations, enabling us to successfully forward engineer the aromatic amino acid metabolism in yeast."

-Michael Krogh Jensen, PhD, Co-Principal Investigator, The Novo Nordisk Foundation Center for Biosustainability.



"Biology has changed radically in the past two decades, growing from a descriptive discipline into a predictive science. With TeselaGen, we will be testing and perfecting the tools that enable collecting the large amounts of multimodal data needed to optimize the production of various renewable bioproducts."

-Hector Garcia Martin, Computational Biologist Staff Scientist, Berkeley Lab







Learn more about TeselaGen and request a demo today at:

www.teselagen.com