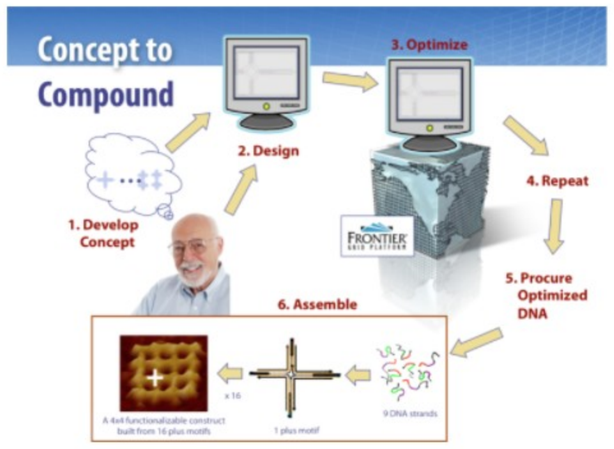
Parabon™ Essemblix™ – Designing drugs, one molecule at a time

By fully leveraging the power of DNA, we are developing a new class of nano-pharmaceuticals that provide individualized treatments for some of the most challenging diseases.

The ability to rationally design and produce multifunctional compounds with Essemblix, where the relative location of each subcomponent is precisely determined, gives our scientists and customers a compelling drug development advantage.

Our research team is actively using the Essemblix platform to develop drug compounds in therapeutic areas such as infectious disease and oncology. With funding from the National Institute of Allergy and Infectious Disease (NIAID), we are currently developing vaccine formulations against HIV. With funding from the U.S. Department of Defense, our scientists are also developing novel drug nanocarriers and investigating new methods of biopathegen detection and decontamination.



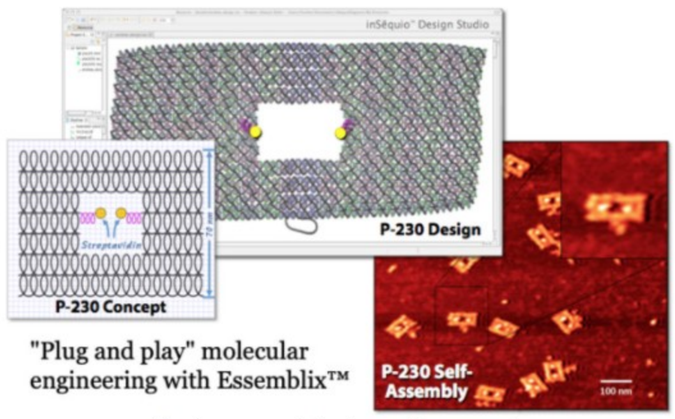
Watch our **FNANO 2021** Presentation

Essemblix Products & Services

With Essemblix, we design and produce functional DNA-based nanostructures for ourselves and our customers.

Essemblix's "plug-and-play" molecular engineering makes it possible to create an enormous variety of multi-functional compounds. Functional subcomponents of Essemblix compounds include:

- cell-specific targeting agents
- therapeutic payloads, such as small molecules or siRNA
- imaging tracers; and,
- precisely patterned antigens for eliciting strong immune response.

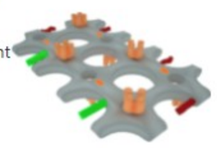


*The above stages of development for an example nanocarrier, **P-230**, show that Essemblix can facilitate concept to compound efficiently and affordably.*

Our Pharmaceutical Pipeline

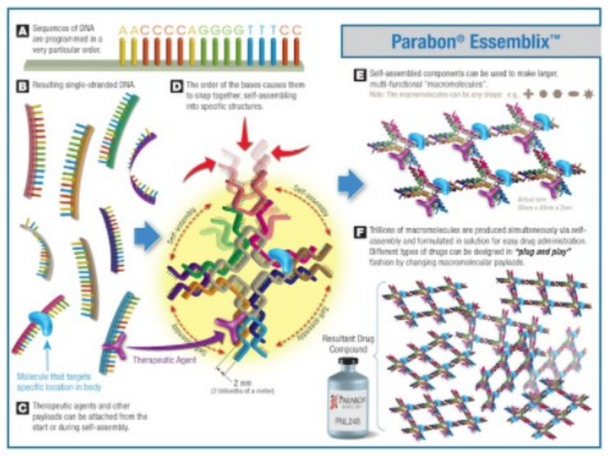
P24RDN is designed for the treatment of GBM. Preclinical studies have demonstrated it to be safe and effective, and significantly increases survival in murine models hosting intracranial human glioma tumors.

PJ-01, which is being developed through a partnership with Janssen Pharmaceuticals, is designed for the treatment of prostate cancer. Preclinical studies are underway.



How Essemblix Works

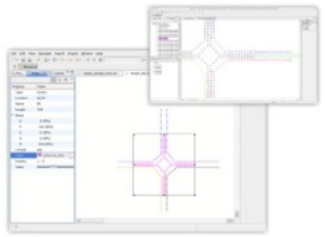
Key to the approach is the use of synthetic DNA as a programmable molecular substrate. Although DNA is best known as a carrier of genetic information, strands of synthetic DNA can be constructed to have any sequence of bases (often represented by the letters A, C, G and T).



Because complementary sequences of DNA are mutually attractive, synthetic strands can be "programmed" with sequences that cause them to "swim to the right spot," with respect to one another, and then bind to form nanostructures of virtually any shape. Before self-assembly is induced, DNA strands can be attached to other types of molecular subcomponents so that they are pulled into designated locations by the DNA strands during self-assembly.

The Parabon™ inSēquio™ Design Studio

The inSēquio™ Design Studio allows Parabon's pharmaceutical engineers to graphically enter designs and then, using the extreme-scale computing capacity of Parabon's **Frontier® Compute Platform**, determines the optimal DNA sequences that will self-assemble into the specified design.



inSēquio's simple-to-use graphical editor allows nano-engineers to lay out a nanostructure visually. Users can rotate and bend strands, define bindings between base pairs, and copy and paste sequences and structures between design documents.

Services

Using Essemblix, we can design and produce custom nanostructures to satisfy specific customer requirements. Example Essemblix applications include cell/tissue recognition, cell specific transfection, and targeted drug delivery.

To learn more about our design and production services or explore partnership opportunities related to our product pipeline, contact us.

For more information, please email essemblix-sales@parabon.com or call **(703) 689-9689 x207**