



Thom LaBean



Associate Professor  
Materials Science &  
Engineering  
NC State University

Ph.D. in Biochemistry from the  
University of Pennsylvania

**Address:**  
EB1 Room 3030D  
and Labs 3044 and 1031

**Phone:** 919-515-2204  
**Email:** thlabean@ncsu.edu

<http://www.mse.ncsu.edu/research/labean/>

### Programmed Molecular Assembly

#### Research emphasis:

By engineering biomacromolecules (especially DNA and proteins) we program molecular self-assembly as well as the directed assembly of other, functional nanomaterials for a variety of applications in biomedical fields and for the bionanofabrication of nanophotonic and nanoelectronic devices and circuits.

#### Application:

- Anticoagulants (with antidotes)
- Nanoscale ligand presentation to cells
- Bionanofabrication

#### Collaboration potential:

- Custom molecular assemblies
- Biomolecular engineering
- Bio- and chemo-sensing
- Nanoelectronics

#### Selected publications:

A. Rangnekar, J.A. Nash, B. Goodfred, Y.G. Yingling, T.H. LaBean (2016) Design of potent and controllable anticoagulants using DNA aptamers and nanostructures, *Molecules* **21**, 202 (doi:10.3390/molecules21020202).

A. Rangnekar and T.H. LaBean (2014) Building DNA Nanostructures for Molecular Computation, Templated Assembly, and Biological Applications, *Accounts of Chemical Research* **47**, 1778–1788 (doi:10.1021/ar500023b).

R.O. Pedersen, E. Loba, and T.H. LaBean (2013) Sensitization of Transforming Growth Factor- $\beta$  Signaling by Multiple Peptides Patterned on DNA Nanostructures, *Biomacromolecules* **14**, 4157–4160.

I. Saaem and T.H. LaBean (2013) Overview of DNA Origami for Molecular Self-Assembly, *WIREs Nanomedicine & Nanobiotechnology* **5**, 150-162.