



Optimising of biomolecules by randomised methods – a small selection

## Polishing the Jewels

Sloning Biotechnology (see related article on pages 40-42) is not the only European company that is engaged in directed evolution. The following firms are specialised in optimising of biomolecules by randomised methods, too.

**Biospring** (Frankfurt, Germany) “has developed a new technology for evolutive enzyme optimisation” (according to their website). Offering gene libraries with a statistical distribution of mutations, Biospring refused to deliver further information on the company and their technology.

**C-Lecta** (Leipzig, Germany) discovers, optimises and produces tailor made enzymes for industrial, diagnostic and scientific applications. The company’s technology platform, “applies a broad range of mutagenesis techniques” to obtain enzymes that are improved in temperature and solvent resistance, stability and specificity. C-Lecta was founded in 2004 by two biochemists, Thomas Greiner-Stöffele und Marc Struhalla, and has 28 employees.

**Evocatal** (Düsseldorf, Germany) is a spin-off of the University of Duesseldorf, co-founded in 2006 by microbiologist Thorsten Eggert. With a staff of 13, Evocatal develops, “processes for [the] production of fine chemicals based on biocatalysts” (in other words, the firm optimises enzyme properties using molecular engineering). Employing a staff of 13, Evocatal won the startup competition Rhineland in 2007 and is, “focussed on industry customers.”

**Geneart** (Regensburg, Germany), with a staff of nearly 200, refers to itself as, “the world’s leading supplier of synthetic genes.” Recently preferences have shifted more and more towards directed evolution, says the company’s CEO, Ralf Wagner. Concerning *in vitro* molecular evolution, Geneart offers multiple services, such as advanced mutagenesis, controlled randomisation, sequential permutation libraries and other DNA libraries.

**Millegen** (Labège, France), established in 1999, is specialised in the discovery of fully human antibodies, optimised by genetic engineering and high throughput functional screening

**Molecular Partners** (Zurich, Switzerland), incorporated in 2004 as a spin-off of the University of Zürich, develops a novel class of biological drugs known as “darpins”, that, “have the target binding properties of antibodies but feature superior stability and expression.” The darpin technology was developed by Morphosys co-founder Andreas Plückthun.

**Nautilus Biotech** (Evry, France) engineers and modifies native proteins to create slight variants with improved therapeutic and/or safety profiles. The drug discovery and development company uses single aminoacid point mutations that improve pharmacokinetic and pharmacodynamic features, such as oral availability as well as increased recovery in blood following subcutaneous injections.

**Pieris** (Freising, Germany), established in 2001, engineers anticalins, i.e. a novel class of binding proteins. According to the company, anticalins, “have a rapidly adaptable structure, a small size, a predictable stability and other unique features.” Pieris generates libraries of structurally diverse anticalins to screen for novel diagnostic and therapeutic products. The company has 35 employees.

**Protéus** (Nîmes, France) discovers, engineers and manufactures commercially usable proteins, protein-based products and processes. Founded in 1998, the company, with a staff of 40, uses gene shuffling technologies to create new variants of proteins starting from either a single parental gene or from a pool of parental proteins, respectively.

**Scil Proteins** (Halle, Germany) develops and manufactures novel and recombinant proteins for therapy, diagnostics and applications in chromatography. The company has 48 employees. -WK-