

## Supporting the Trend to Outsource Drug Discovery and Development

a report by

**Dr Michael Lutz**

Senior VP Marketing, Evotec OAI

In order to meet the ever-increasing challenges and demands of drug discovery and development, companies today are constantly faced with the need to reduce the time and cost of bringing new drugs to the market. In this respect, both pharmaceutical and biotechnology companies increasingly choose to outsource parts or even entire projects to specialist companies with expertise in certain areas of the drug discovery and development process.

To date, Evotec OAI AG is one of the leading providers for innovative drug discovery and development solutions based on their unmatched range of fully integrated capabilities, their cutting-edge technology platforms and proprietary disease-oriented research programmes.

The company, at its two main sites in Hamburg (Germany) and Oxfordshire (UK), employs more than 600 people and has therefore reached a critical mass that assures quality and timely delivery of its solution offering. More than 80% of these employees are scientific graduates. Subsidiaries are located in Europe and North America and agents in Japan.

Over the past 10 years, Evotec OAI has completed projects with over 200 companies, including all of the top 20 global pharmaceutical companies and major biotechnology companies. By working closely with its partners to make optimal use of its unique scope and breadth of offerings, to date, it has delivered more than 20 lead compounds and 10 pre-clinical development candidates, with four drugs approved for clinical use. In short, the company has established a unique position for all the critical elements in the drug discovery and development process – based on three integrated platforms ranging from target to clinical development (see graphics), endorsed by an impressive track record in all major druggable target classes.

### **EVOdiscover™**

EVOdiscover™ is the first platform within Evotec OAI's drug discovery and development engine, which allows customers to derive high-quality validated hit series at high speed. This platform

combines both world-class biology and chemistry capabilities, ranging from assay development to hit profiling around all major druggable target classes.

Specifically, Evotec OAI has performed over 150 assay development projects based on its target class expertise in the following areas:

- G-protein-coupled receptors (GPCRs);
- kinases;
- phosphatases;
- proteases;
- ion channels;
- protein interactions; and
- nucleic acid binding proteins.

This experience is combined with unique chemical space at screening stage using either Evotec OAI's compound library of >250,000 compounds or virtual libraries from its computational chemistry group. It can also screen compounds provided by the customers.

Evotec OAI has established a world-class proprietary, ultra high-throughput (uHTS) platform, EVOscreen®. This platform utilises proprietary confocal fluorescence read-out technology, FCS+ plus – measuring fluorescent molecules down at the single molecule level. This technology is applied for the majority of biochemical assays but also to complex cellular functional assays using its proprietary confocal high-speed imaging cell reader system (OPERA). Once hits are identified, further hit profiling is conducted with respect to potency, selectivity and analysis, distribution, metabolism, excretion and toxicology (ADMET) properties

### **EVOoptimise™**

EVOoptimise™ is the second platform within Evotec OAI's drug discovery and development engine from target to clinic, which is centered on its world-class medicinal chemistry capabilities. As a result, Evotec OAI's customers are in a prime position to access multiparameter hit and lead optimisation, resulting in quality pre-clinical development candidates in a very timely and cost-effective manner.



Figure 1



Over the last few years, Evotec OAI has assembled one of industry-leading integrated chemistry platforms across all major therapeutic areas with an enviable track record of collaborations globally and a staff of nearly 200 personnel. It applies this expertise in H2L and lead optimisation programmes, and in chemical library synthesis projects. With its structural biology group working closely with computational and medicinal chemists, Evotec OAI complements random drug discovery with rationale drug design.

Structural biology capabilities include protein engineering and purification, rapid crystallisation screening and de novo protein structure determination. Evotec OAI's computational chemistry group is also able to offer all the standard structure-based methods needed to support medicinal chemistry, as well as focused library design and pharmacophore studies.

Evotec OAI offers a portfolio of *in vitro* ADMET assay systems to provide validated hits and to support medicinal chemistry. Its ADMET services comprise widely applied and thoroughly validated test systems in the fields of physicochemical properties and

membrane permeation, metabolism and Cytochrome P450 (CYP) liabilities, protein binding, human ether-a-go-go-related gene (hERG) blockade and cytotoxicity. In addition, *in silico* ADME/Tox modelling is offered and being performed to support both tailored compound optimisation programmes and whole-library synthesis.

Of course, a programme management team with extensive experience in medicinal chemistry collaborations is essential to the successful application of the integrated technologies to meet the specific needs of each project.

### EVOdevelop™

EVOdevelop™ is the last platform within the Evotec OAI drug discovery and development engine. This platform integrates high quality capabilities for successful chemical and pharmaceutical development. Specifically, Evotec OAI also offers support for companies in areas of rapid custom synthesis (including to current good manufacturing practice (cGMP)), novel route development, process optimisation and development, salt selection/polymorph screening, cGMP and non-GMP scale-up and manufacturing, analytical method development and validation, and regulatory support. Covering more than 5,000m<sup>2</sup>, Evotec OAI's two state-of-the-art pilot plants provide material from 1kg up to hundreds of kilograms for phase I-III clinical trials and small scale commercial manufacture.

In collaboration with its subsidiary ProPharma, Evotec OAI is able to expand its development capabilities by offering drug pre-formulation and formulation development, sterile drug manufacture (including quantities for phase I and II), and labelling, stability, qualified person (QP) release, and storage and shipment.

### Summary

In essence, Evotec OAI believes that with its level of expertise and track record for delivery it is uniquely positioned to be the solution provider partner of choice. Whatever a company's reason to outsource, be it increased speed, increased capacity, access to innovative technologies or decreasing attrition rates, Evotec OAI's goal is to meet their requirements and provide solutions to problems in a truly collaborative manner. ■