

Prestwick Chemical Inc. (PCI), established in 1999, provides innovative libraries to pharmaceutical and biotechnology companies, as well as academic research laboratories. Designed to help scientists discover medicinal products, PCI offers a broad range of expertise in medicinal chemistry, particularly in hit and lead optimisation. Such libraries can be a useful tool in facilitating academic research. *OrphaNews Europe* interviewed Sales manager Marie-Louise Jung to learn more about the relevance of chemical libraries to rare disease academic research:

OrphaNews Europe: What PCI products and/or services are of particular interest to rare disease treatment development?

MLJ: The [Prestwick Chemical Library](#), composed of 1120 molecules which are mainly drugs out of patent, is a compound collection dedicated to screening for all laboratories searching for new and safe hits. This Library can be recommended particularly for rare disease research, as it allows a fast lead development, the selection of molecules being known for their bioavailability and safety in humans. Furthermore, Prestwick Chemical offers optimization of the lead into a drug candidate in form of a contract research service.

OrphaNews Europe: What are the benefits to researchers in opting to work with marketed drugs and products?

MLJ: If a compound hits with sufficient potency, the chances are high that it could rapidly be tested in patients, and a use-patent may be possible.

If a compound hits with insufficient potency, optimized analogues can be synthesized. The chances that these analogues will be good candidate drugs for further development are much greater than if the initial lead is toxic or not bioavailable.

OrphaNews Europe: What kinds of rare disease research has PCI been involved in? Have you worked with rare disease research teams in Europe?

MLJ: We have been involved with an American team on a neuro-degenerative disease, but have so far been requested to maintain strict confidentiality. We have also collaborated with an academic team in Lyon on Duchenne's muscular dystrophy.

OrphaNews Europe: Can you comment on the advantages of the smaller-sized models – in particular in rare disease treatment research?

MLJ: The Prestwick Chemical Library is pre-packaged in 96-microtube plates, ready for screening. Each microtube contains 2 mg in 1 mL of DMSO or 5×10^{-3} M (so no need to weigh or dissolve the compounds).

Since the library is of manageable size (1120 compounds), aliquotting can be achieved manually. You do not need to be equipped with High Throughput Screening (HTS) robotics to use the Prestwick Chemical Library. Customised packaging is also possible

OrphaNews Europe: Could you briefly describe the lead optimization stages of research between an academic research team and PCI.

MLJ: Starting from a weakly active lead compound, usually identified by the customer, Prestwick Chemical proposes a research project to lead-optimise. The project is discussed and approved by both parties. Our medicinal chemists then undertake the synthesis of a reasonably large number of analogues with the objective of increasing potency and decreasing potential "other" effects. In addition, our chemists will take into account other properties (bioavailability; solubility; ...). The overall objective is to quickly discover potent compounds, suitable for further pharmaceutical development.

OrphaNews Europe: How do you see the future for public-partner research partnerships? What kind of advances in government policy would facilitate these partnerships?

MLJ: With the creation of 3 major biotech clusters in France, the French government has significantly improved the conditions for public-partner research collaborations. This obviously would need more flexibility (capacity to have trans-cluster projects, or involvement of other European partners in a project).

Beyond these clusters, sharing IP with French public research institutes remains difficult (while improving).

Overall, we are located in France where the regulatory environment (social, tax...) enables us to be very competitive compared to other developed countries, especially when considering productivity and quality of the science delivered.

OrphaNews Europe: Are there similar libraries available on the market? If so, what is the added-value of yours?

MLJ: We are aware of two other libraries containing marketed drugs that have limited overlap with the Prestwick Chemical Library. The Prestwick Chemical Library is the only one offering about 90% of drugs out of patent.. We consider as well the needs of our customers in terms of quantity and offer the Library in different formats, and guarantee re-supply up to 100mg.

OrphaNews Europe: Your team has a largely academic background. Do you continue to collaborate with academic researchers?

MLJ: We still are engaged in several academic collaborations, including a laboratory from Lyon working on Duchenne's muscular dystrophy.

Dr. Pascale Borensztein, General Secretary of the *GIS-Institut des Maladies rares* (Rare Diseases Institute) is responsible for coordinating rare disease research activities and funding opportunities, primarily for academia. *OrphaNews Europe* asked Dr. Borensztein to comment on the role molecule libraries can play in facilitating academic research:

The possibility to screen thousands of molecules on a specific cellular target may help to explore cellular function and to find new drug targets which could then move into the drug-development pipeline. One difficulty is to develop an adequate biological assay, another is to validate a match between a chemical and its target, and further develop the chemical. The more the library contains known products, which have already been developed and tested for bioavailability and toxicity, the more time the researcher can potentially save. Indeed such libraries could potentially allow the scientist to eliminate certain steps of development.

In order to provide new tools for therapeutic research for rare diseases, one hypothesis would be to make interesting chemical libraries available for research projects and teams.