Icagen Inc. (Pfizer)
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Company Website: http://www.icagen.com/index.html
Number of employees: 30

Non-confidential description of company and nature of business:
Icagen Inc. is a wholly owned subsidiary of Pfizer and is part of the research unit named Neusentis. Neusentis resides within the Pharma-Therapeutics division of Pfizer Inc and is focused on the discovery, development and commercialization of drugs to treat pain and sensory disorders. With a HQ in Cambridge, UK, research activities in Neusentis are supported by clinical development, statistics, molecular medicine, business development, legal and external alliances teams. Icagen represents the Durham, North Carolina hub of Neusentis and this interaction was formed in November 2011 following the acquisition by Pfizer of Icagen Inc. Icagen is one of the industry leaders in ion channel directed drug discovery and development. Pfizer and Icagen had been collaborators on the development of ion channel based pain therapies since 2007 and Neusentis (Durham) will continue ion channel directed drug discovery and development in North Carolina.

Ion channels are protein structures found in virtually every cell of the human body. Ion channels span the cell membrane and regulate the flow of ions, which are charged particles such as sodium, potassium, calcium and chloride, into and out of cells. Ion channels are important in the generation of electrical signals in nerve fibers that mediate the initiation, transmission and sensation of pain. By integrating both scientific and drug development disciplines, we are able to efficiently discover small molecule compounds that are more specific for those ion channels that mediate the sensation of pain, molecules with fewer side effects and a higher probability of becoming an effective treatment for serious pain disorders. Neusentis is currently evaluating two of its ion channel modulating drug candidates in human clinical trials and has active programs to develop the next generation of these ion channel targeting drugs.

Neusentis (meaning ‘new science therapeutics’) also carries out research into auditory and visual disorders linked to ion channels and is developing Pfizer’s regenerative medicine portfolio, including the Corporation’s first stem cell clinical study for ulcerative colitis. Neusentis’ vision is to deliver medicines providing significant benefit to many individuals for whom existing therapeutic agents remain inadequate. The strategy for achieving this is based on a strong belief in the underlying science of selection of new, promising therapeutics, to deliver improvements in the beneficial way pain killers are delivered, fully exploit other therapeutic opportunities for key targets and deliver more differentiated drugs by investing in key emerging experimental areas such as epigenetics and stem cell biology. In name, location and philosophy, Neusentis epitomizes the future of drug discovery and development at Pfizer which involves working in partnership with academic researchers around the globe to change the lives of patients suffering from diseases and disorders for which there are no therapies or cures.

Non-confidential description of company’s core technolog(ies):
Neusentis has established an integrated set of core technologies for the discovery of drugs that act upon ion channel targets. Our platform technologies, which we apply across existing and emerging areas of therapeutic interest in our drug discovery programs and across the two sites of Neusentis (Cambridge &
Durham), broadly cover the key disciplines necessary for ion channel drug discovery. These include molecular biology, electrophysiology, high throughput screening, chemistry, bio-analytics, in vitro and vivo pharmacology. Neusentis (Cambridge) also has a dedicated, multidisciplinary group with expertise in toxicology, drug substance synthesis and clinical development, in support of drug candidate development all the way to NDA approval. A human cell platform consisting of sensory neurons derived from pluripotent stem cells is also being established in Neusentis (Cambridge). As a separate unit within Pfizer, Neusentis can also draw upon the full repertoire of expertise a successful pharmaceutical company can provide in support of later stage drug development and commercialization.

As the foundation of Neusentis’s ion channel focused drug discovery efforts, the unit has more than 300 human ion channel genes accessible for evaluation, which represents nearly all of the ion channel genome. There is an extensive collection of cell lines stably expressing genes in diverse, specific configurations which mimic native ion channel complexes in the human body. The Human stem cell platform consists of reprogramming of cells obtained from patients with the genetics and pain phenotypes of interest. This wide ranging library of reagents and assays enables us to rapidly initiate new ion channel drug discovery programs, perform high throughput screens in parallel across multiple ion channel targets and understand the relationship among various ion channels and compound classes that are active against ion channels.

Electrophysiology is a critical component of ion channel drug discovery. Neusentis has an experienced electrophysiology group equipped with state-of-the-art technologies. The skill, expertise and experience of the electrophysiology group enable Neusentis to understand the function of each of the ion channel targets and their modulation by drug candidates. Through the detailed analyses performed by this group, Neusentis is better able to understand the likely role of the channel in the tissue of interest and the likely effects of its modulation by small molecule compounds. The expertise in the application of conventional patch clamp electrophysiology techniques, such as single cell patch clamp, current and voltage recordings from both recombinant and native cells is supplemented with experience in micro-electrode/whole-cell recording using ex vivo neural slice and cardiac preparations. Advanced capabilities have ensued from integration into work flow of more recently developed, high throughput electrophysiology platforms (i.e. PatchXpress, IonWorks Quattro).

**Proposed Scope of Work for Fellow:**
The successful candidate will work closely with colleagues in the early discovery and lead development areas of pre-clinical research at Neusentis (Durham) and focus on activities that enable improved mechanistic understanding of the ion channel targets and drug candidates. A company senior scientist with an established track record of successful supervision and staff development will be nominated to provide industry-oriented scientific mentorship. The project will focus on electrophysiological characterization of validated ion channel targets. The research fellow will also have access to equipment, facilities and expertise across the range of disciplines described previously. It is expected that the research fellow will interact and collaborate with colleagues at the Neusentis site in Cambridge as part of the project plan. While in the UK the individual will also participate in a structured educational component focused on learning about the business activities associated with new medicines development and technology commercialization.

**Proposed Activities:**
The fellow will be responsible for the design and execution of in vitro and ex vivo studies to provide target validation and insight into fundamental pain signaling in first order and second order sensory neurons. The goal of the studies will be to provide insight into the initiation, propagation and transmission of signals in peripheral nociceptive neurons. In particular, elucidating the role of therapeutically relevant and genetically validated ion channel targets in the function of primary afferent nociceptive neurons will be the focus of the project. Studies will utilize a combination of in vitro pharmacology, electrophysiology and biophysical analysis complemented by proprietary small molecule modulators of ion channel function. The individual will work as a valued team member and be encouraged to participate in group meetings on project life cycle management, such as execution and reporting, risk identification and mitigation planning and thereby contribute to the overall delivery to deadlines of key, team based goals. At the relevant stage of the planned work schedule, the research fellow while in the UK will spend some additional time being introduced to new techniques and technologies not used yet by the Neusentis (Durham) research team, such as the human stem cell platform. Making use of the support functions in the UK, consideration will be given for the research fellow to learn about business related activities, with the aim being to provide the individual with a balanced appreciation of those features necessary for the successful clinical and business delivery of medically differentiated products, such as management of product life cycle, intellectual property, regulatory & medical affairs.

**Desired Qualifications of Fellow:**
Ph.D. or equivalent in biology, physiology, neuroscience or a related field. Expertise in patch-clamp electrophysiology and an extensive knowledge of ion channel biology is required. Specific expertise in pain or neurophysiology would be desirable. Knowledge of common laboratory instruments and general lab procedures, experience with primary cell isolation and culture, as well as knowledge of software used for electrophysiological experiments is required. The successful candidate will also demonstrate the ability to organize and present data, have strong written and oral communication skills, and must be comfortable working in a team-oriented environment. An entrepreneurial spirit is a desired attribute but is not essential.

**Benefits Description:**
Salary $60,000 a year
health benefits; Medical, Dental, Vision 401k match Insurance coverage (life, dependent, accident, disability) Pfizer drugs free Vacation – 3 weeks a year Holidays – 13 throughout the year