Internship Opportunities in the Industry

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Learning Objective: The trainee participant will be able to gain insight into the formal internship programs available in the pharmaceutical/biotech industry

Outline:

- Review the learning objectives
- Summarize the methodologies used in the acquisition of internship jobs
- Provide a brief descriptions of the career opportunities
- Summarize the general requirements and desired experience for the positions
- Conclusions

Methods: Sequential online searches for 2016

- **Google.com**
  - https://www.google.de/#q=clinical+pharmacology+internship
- **Indeed.com**
  - http://www.indeed.com/jobs?q=Internship+Clinical+Pharmacology&l=
- **SimplyHired**
  - http://www.simplyhired.com/k-internship-clinical-pharmacology-jobs.html
- **Glassdoor**
  - https://www.glassdoor.com/
- **ASCPT**
  - http://careers.ascpt.org/c/search_results.cfm?site_id=279&quick=function%7CIntern
- **ACCP**
  - http://jobs.accp1.org/jobseeker/search/results/

14 positions identified, all sites provided results except for ASCPT and ACCP

Description of opportunities (N =14)

1. Physiologically based pharmacokinetics (PBPK) to predict in vivo pharmacokinetics in man from pre-clinical data and physicochemical properties or Gastroplus (Boehringer Ingelheim)
2. Writing pharmacometric analysis plans, performing hands-on pharmacometric analyses and literature review (Boehringer Ingelheim)
3. Build a PK case library for internal reference and education, establish a PK/PD modeling platform and provide a combined consultation/performance/analysis service for clients (Covance, Madison)
4. Identify strategies/decision-making used for dose-selection. a systematic re- view of FDA/BLA/NDA documents, scientific literature search, and gathering and summarizing the data collected (Genentech)
5. Use quantitative approaches to under-stand the Clinical PK/PD of novel drug candidates. This individual will use Modeling and Simulation tools to enhance quantitative decision making (Genentech)

Descriptions listed alphabetically by company

Description of opportunities (N =14)

6. Assist with the bioanalysis of clinical and nonclinical study samples to assess the induction of neutralizing antibody (NAb) immune responses to therapeutic proteins (Janssen Biologics)

7. Supporting research and development in the areas of design of experiment, pharmacokinetic analyses, report writing and graphical exploration as well as literature search; compiling comparative profiles of different medicines, or written responses to health authority requests. (Janssen- Clinical Pharmacology)

8. The Model Based Drug Development (MBDD) development and application of quantitative methodologies (mixed effects modeling, meta-analysis, PK/PD analysis, and disease progression modeling) across all phases of drug development. (Janssen- MBDD)

Description of opportunities (N =14)

9. Support research and development in areas that range from drug discovery through Phase 2 and 3 clinical studies, including data preparation, statistical analyses, report writing and graphical exploration as well as the writing of computer programs associated with the statistical analyses (Janssen-Biometrics)

10. Provide programming support to Pharmacokineticists conducting PK, PD, Toxicokinetic, population PK analyses, etc. related to nonclinical and clinical drug development; design R code to generate summary PK and PD tables, listings, and graphs from clinical and nonclinical studies. (Neventra)

11. Develop an integrated drug-disease-viral dynamics (PK-PD-VD) mathematical model, that can be used to support drug development activities for one or more programs (Regeneron)

Description of opportunities (N =14)

12. Support Research and Translational Medicine. Training in biology related to oncology therapeutics and hands-on experience in PK and PK/PD modeling are preferred but not required. (Seattle Genetics)

13. Applying mathematical modeling and data analysis to biological problem solving given a real-world translational oncology modeling problem with close guidance of clinical pharmacologists, biologists, and clinicians. (Takeda)

14. Learn to develop and qualify PBPK models using specialized tools such as SimCYP. to address drug development questions; help the clinical pharmacologist compile information from publications. (Takeda)

Educational requirements

- Education
  - 50% required a graduate or professional student status (PharmD, MS, Ph.D., MD)
  - Others generally later years of BS program
  - Major in relevant field: chemistry, biochemistry, Pharmaceutical Science, Biomedical Engineering, Computer Science, Math, Statistics
- Experience: dependent on the duties, representative examples-
  - NONMEM, S-plus, Matlab, programming experience- R/SAS, SAS, Berkeley Madonna

Conclusions

- Interns play a valuable role in industry by impacting collaborating with scientists across the company by exploring new ways to design studies analyze data, or investigate new ways of analyze data, to impact development decisions. Positions are primarily on the east and west coast.
- Experiences in general might summarized broadly into the two following areas:
    - Clinical Pharmacology: assisting in study design, analysis of data, report writing, literature review.
    - Quantitative Pharmacology: assisting in the evaluation/data analysis using advanced software or techniques such as Physiological-based PK, GastroPlus, SymCyp, Model-based Drug Development
- In general, the industry hiring manager / mentor is looking for a graduate or professional student (or advanced BS student) with a major in a relevant field, with experience with software/data analysis, particularly for the Quantitative Pharmacology positions.