



Digital Skills for Healthcare Transformation

Grant Agreement 101083563

INTERNSHIP CATALOGUE TEMPLATE

TABLE OF CONTENTS

Inhalt

1	Internship Catalogue Template: Bayer.....	3
2	Internship Catalogue Template: CLINOMIC.....	5
3	Internship Catalogue Template: ITTM.....	6
4	Internship Catalogue Template: Telemedicine Centre	8
5	Internship Catalogue Template: INSTITUT JOZEF STEFAN.....	10

1 INTERNSHIP CATALOGUE TEMPLATE: BAYER

Internship Title

Development of a Physiologically-Based Pharmacokinetics (PBPK) Model in Open Systems Pharmacology (PK-Sim)

Hosting Institution/Company

The internship is offered by Model-Informed Drug Development at Bayer AG, Germany in collaboration with the Open Systems Pharmacology open science community.

For more information see www.open-systems-pharmacology.org.

Internship Overview

Physiologically-Based Pharmacokinetics (PBPK) modeling is one of the computational approaches in Model-Informed Drug Development. It is used by pharmaceutical companies and accepted by regulatory agencies as tool to design, sometimes replace clinical studies. Typical applications are the prediction of drug exposure in humans based on preclinical data, the selection of doses for clinical trial in special populations (e.g. children, patients with hepatic or renal impairment), or the demonstration of the bioequivalence of two drug formulations (e.g. for the approval of generic drug products).¹

Open Systems Pharmacology^{2,3} (OSP) is an open science community developing modeling and simulation software and computer models available for free for the scientific community (academia, regulators, and industry). Hundreds of scientific publications have been based on the OSP platform⁴.

The intern will develop a PBPK model for a marketed drug, characterize and qualify the model, and publish reference data and the model on the Open Systems Pharmacology repository. The model will contribute to the broadening of the knowledge- and capability-base of the global OSP community.

1. Kuepfer L, Niederalt C, Wendl T, Schlender JF, Willmann S, Lippert J, Block M, Eissing T, Teutonico D. *Applied Concepts in PBPK Modeling: How to Build a PBPK/PD Model*. *CPT Pharmacometrics Syst Pharmacol*. 2016 Oct;5(10):516-531. doi: 10.1002/psp4.12134. Epub 2016 Oct 19. PMID: 27653238; PMCID: PMC5080648.
2. Lippert J, Burghaus R, Edginton A, Frechen S, Karlsson M, Kovar A, Lehr T, Milligan P, Nock V, Ramusovic S, Riggs M, Schaller S, Schlender J, Schmidt S, Sevestre M, Sjögren E, Solodenko J, Staab A, Teutonico D. *Open Systems Pharmacology Community-An Open Access, Open Source, Open Science Approach to Modeling and Simulation in Pharmaceutical Sciences*. *CPT Pharmacometrics Syst Pharmacol*. 2019 Dec;8(12):878-882. doi: 10.1002/psp4.12473. Epub 2019 Nov 12. PMID: 31671256; PMCID: PMC6930856.
3. Dallmann A, Teutonico D, Schaller S, Burghaus R, Frechen S. *In-Depth Analysis of the Selection of PBPK Modeling Tools: Bibliometric and Social Network Analysis of the Open Systems Pharmacology Community*. *J Clin Pharmacol*. 2024 Sep;64(9):1055-1067. doi: 10.1002/jcph.2453. Epub 2024 May 6. PMID: 38708848.

4. <https://github.com/Open-Systems-Pharmacology/OSP-based-publications-and-content/issues?q=is%3Aopen+is%3Aissue+label%3AJournal>

Tasks and Responsibilities

List of main tasks, e.g.:

- Training in the Open Systems Pharmacology Software Suite, in particular PK-Sim®
- Literature and database research to identify all relevant physico-chemical properties, ADME parameters and pharmacokinetics of the drug of interest in animal models and humans
- PBPK modeling of drug
- Qualification of the model by comparison of simulation results with experimental data
- Documentation of work and publishing on OSP Github (<https://github.com/Open-Systems-Pharmacology>)

Internship Duration and Period

- Recommended Duration: 3-6 months
- Start Date: Flexible
- Working Hours: Flexible

Modality

- Remote

Application Process

- Deadline: Rolling
- Required Documents: CV, Motivation Letter, Transcript etc.
- Contact Person:
Jörg Lippert
Head of Model-Informed Drug Development, Bayer AG
Member of the OSP Management Team
joerg.lippert@bayer.com

2 INTERNSHIP CATALOGUE TEMPLATE: CLINOMIC

Internship Title

Internship in Clinical Data Science & AI

Hosting Institution/Company

Name of the Organization

- Website: <https://www.clinomic.ai/>
- Location: Aachen, Germany
- Type of Organization: Private

Internship Overview

Clinomic offers motivated students of the *Data Science for Health* Master's program the opportunity to take part in an internship focused on exciting projects involving medical AI, clinical decision support, and healthcare data analysis.

You will work in interdisciplinary teams on real-world challenges in intensive care medicine - using state-of-the-art tools and technologies.

Tasks and Responsibilities

Possible tasks – depends on the project you will be working on

- Data Preprocessing & Analysis
- Machine Learning Model Development
- AI-driven Clinical Workflow Integration
- AI for Anomaly Detection
- Product Development: Mona

Internship Duration and Period

- Recommended Duration: flexible
- Start Date: Flexible
- Working Hours: Full-time/ Part-time /Flexible

Modality

- On-site preferred/ Remote (within Germany) / Hybrid (within Germany)

Application Process

- Deadline: Rolling
- Required Documents: CV, Motivation Letter
- Contact Person: Linda Mohamed-Mertes, HR-Manager, lmertes@clinomic.ai

3 INTERNSHIP CATALOGUE TEMPLATE: ITTM

Internship Title

OMOP CDM Mastery: Healthcare Data Harmonization and Analytics

(Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM))

Hosting Institution/Company

- ITTM S.A. (Information Technology for Translational Medicine)
- Website: <https://www.ittm-solutions.com/>
- Location: 29 Rue Henri Koch – House of BioHealth, 4354 Esch-sur-Alzette, Luxembourg
- Type of Organization: SME

Internship Overview

This comprehensive course trains students into skilled practitioners of healthcare data standardization using the globally-adopted OMOP Common Data Model framework. Participants will master the OHDSI (Observational Health Data Sciences and Informatics <https://www.ohdsi.org/>) suite of analytical tools while learning best practices for healthcare data harmonisation, quality assessment, and multi-site collaborative research. The modular curriculum accommodates varying expertise levels, ensuring each learner can customize their path based on specific objectives and prior knowledge. Upon completion, students will confidently execute end-to-end data transformation projects and leverage OMOP-standardized data for robust clinical research and epidemiological studies.

Tasks and Responsibilities

List of main tasks:

- OMOP CDM Structure
 - o Source to standard mapping
- Fundamentals of OHDSI's ETL
- Data Quality Assurance
- Database Characterization using Atlas
- Using OHDSI-in-a-Box

Internship Duration and Period

- Recommended Duration:
 - o 8 to 40 hrs. (depends on goals and modules selected)
 - o 1 day – teaser
 - o 1 week – Introduction
 - o Student project: 1-2 months

- Start Date: Flexible
- Working Hours: Part-time (2-4 hr/day)

Modality

Remote

Application Process

- Deadline: Rolling
- Required Documents: Motivation Letter, CV with indication of knowledge level of SQL, R and basic statistical methods.

Contact Person: Adriano Barbosa, adriano.barbosa@ittm-solutions.com, Senior Bioinformatician and Data Curator

4 INTERNSHIP CATALOGUE TEMPLATE: TELEMEDICINE CENTRE

Internship Title

Data Analysis in telemedicine and acute care Monitoring / Medical staff in telemedicine and patient data management

Hosting Institution/Company

Name of the Organization: University Hospital RWTH Aachen, Telemedicine Centre

- Website: <https://www.ukaachen.de/kliniken-institute/telemedizinzentrum-aachen/zentrum/>
- Location: Pauwelsstraße 30, 52074 Aachen
- Type of Organization: Academic/Research/Private/NGO/Other

Internship Overview

At the Telemedicine Center in Aachen, we coordinate and support digital healthcare services across multiple clinical departments. Our team conducts and manages regular teleconsultations with partner hospitals, ensuring high-quality medical collaboration and patient care. We provide technical and organizational support to telemedicine physicians and are responsible for the documentation and secure processing of medical data. In addition, we contribute to the development and evaluation of innovative digital health solutions. The center plays a key role in advancing telemedical research and improving access to specialized medical expertise.

Tasks and Responsibilities

List of main tasks, e.g.:

- Participating in teleconsultations with our partner hospitals
- Assisting with the electronically supported documentation of patient data: preparing, structuring and maintaining datasets
- Working in the inter-disciplinary team: collaborating with physicians, nursing staff, IT/medical informatics, tele-pharmacy etc.
- Quality control and follow-up of telemedicine cases
- Optimizing the data-extraction process, formulate guidelines for it and thereby create the foundation for a database
- Preparing of existing telemedical data, which will be used for future publications, reports and further data processing
- Creating reports, statistics, and scientific publications
- Participating in clinical studies and research projects on digital health applications

There is the opportunity to write a **master's thesis** in this area, as a large amount of patient data is available. We visit approximately 1,000 patients per year, and each consultation

generates more than 50 data points that can be evaluated. The exact content and research questions can be discussed at the start of the internship

Internship Duration and Period

- Recommended Duration: 1 Month Internship, 6 Months Master Thesis
- Start Date: Flexible upon agreement
- Working Hours: Full-time/ Part-time /Flexible

Modality

- On-site/ Remote/ Hybrid

Application Process

- Deadline: Rolling date
- Required Documents: CV, Motivation Letter, Transcript etc.
- Contact Person: Dr. med. Sandra Dohmen, Senior Consultant and Managing Physician, sdohmen@ukaachen.de

5 INTERNSHIP CATALOGUE TEMPLATE: INSTITUT JOZEF STEFAN

Internship Title

Biomedical Signal Processing

Hosting Institution/Company

Laboratory for Neuromechanics and Biorobotics, Institute Jozef Stefan (Research institute)

- Website: nbr.ijs.si
- Location: Ljubljana, Slovenia
- Type of Organization: Research

Internship Overview

This internship equips participants with essential skills in biomedical signal processing, analysis and algorithm development. Through practical engagement with physiological data streams (ECG, EEG, EMG), students master the complete signal processing pipeline, from raw data preprocessing to advanced feature extraction and machine learning implementation. The program emphasizes both theoretical foundations and applied engineering practices, preparing interns to tackle complex challenges in biomedical research and healthcare technology. Students will independently design, implement, and validate signal processing workflows for diverse biomedical applications.

Tasks and Responsibilities

- Conduct signal analysis using physiological datasets and real time data streams
- Implement preprocessing pipelines
- Develop feature extraction methods
- Build and optimize machine learning decoders for biosignal pattern recognition

Internship Duration and Period

- Recommended Duration: 6 months
- Start Date: Flexible
- Working Hours: Flexible

Modality

- Hybrid

Application Process

- Deadline: Rolling
- Required Documents: CV
- Contact Person: Niko Kroflič (niko.kroflic@ijs.si)

Internship Title

Human–Robot Interaction and Control for Wearable and Haptic Robots

Hosting Institution/Company

Laboratory for Neuromechanics and Biorobotics, Institute Jozef Stefan (Research institute)

- Website: nbr.ijs.si
- Location: Ljubljana, Slovenia
- Type of Organization: Research

Internship Overview

This internship offers hands-on experience in the real-time control and experimental evaluation of wearable robotic systems and haptic devices, with applications in assistive robotics, neuromechanics, and human motor control. Depending on the student's interests and project scope, the work may involve developing control strategies for an elbow exoskeleton, a bilateral pneumatic lower-body exoskeleton (3 DOF), a haptic robot, or a 2-DOF KinArm system. Across all platforms, students will design experimental protocols, implement software for real-time operation, and build setups capable of applying controlled perturbations while recording biological feedback signals such as EMG and EEG. By the end of the internship, students will have practical experience in control implementation, experiment design, and data analysis with human subjects.

Tasks and Responsibilities

- Design and implement a real-time control strategy for a wearable robot or haptic device
- Develop an experimental protocol for human–robot interaction studies
- Integrate and process biological and sensor data
- Analyze collected data and quantify human responses using statistical or model-based methods

Internship Duration and Period

- Recommended Duration: 6 months
- Start Date: Flexible
- Working Hours: Flexible

Modality

- Hybrid

Application Process

- Deadline: Rolling
- Required Documents: CV
- Contact Person: Marko Jamšek (marko.jamsek@ijs.si)

Internship Title

Safety in Motor Control

Hosting Institution/Company

Laboratory for Neuromechanics and Biorobotics, Institute Jozef Stefan (Research institute)

- Website: nbr.ijs.si
- Location: Ljubljana, Slovenia
- Type of Organization: Research

Internship Overview

When carrying out motor tasks, humans tend to follow various (sometimes conflicting) objectives. Working within the whole-body motor learning experimental setup involving physical perturbations, maintaining safety can be one of the participant's central goals and its dynamics will be the focus of this internship. The aim of this project is to design an experimental protocol, implement the software needed for its execution, and analyze and model how these objectives are prioritized during motor learning. The student will gain experience in designing human experiments and analyzing collected data, and improve the understanding of human motor learning.

Tasks and Responsibilities

- Design an experimental protocol for studying prioritization of safety under perturbations,
- Implement the experimental protocol,
- Collect the experimental data involving human participants,
- Carry out statistical analyses comparing behavior under different conditions.

Internship Duration and Period

- Recommended Duration: 6 months
- Start Date: Flexible
- Working Hours: Flexible

Modality

- Hybrid

Application Process

- Deadline: Rolling
- Required Documents: CV
- Contact Person: Benjamin Fele (benjamin.fele@ijs.si)