

## STOCKHOLM IUPHAR MENTORING CENTRE

**Site:** Clinical Pharmacology, Karolinska Institutet and Karolinska University Hospital

**Address:** Clinical Pharmacology, Karolinska University Hospital, SE-141 86 Stockholm, Sweden

**Contact:** E-mail to marja-liisa.dahl@ki.se or georgios.panagiotidis@ki.se

### Affiliations:

- Dept of Laboratory Medicine and Dept of Medicine Solna, Karolinska Institutet
- Dept of Clinical Pharmacology, Karolinska University Laboratory, Karolinska University Hospital
- Center of Pharmacoepidemiology (CPE), Karolinska Institutet

### Key individuals and special expertise:

|                                      |  |
|--------------------------------------|--|
| Eleni Aklillu, Assoc prof            | Drug interactions, Clinical pharmacogenetics   |
| Olof Beck, Prof                      | Analysis of medicines and drugs of abuse, Clinical toxicology                          |
| Ulf Bergman, Prof MD                 | Drug utilization, Adverse drug reactions, Rational use of medicines (RUM)              |
| Leif Bertilsson, Prof                | Pharmacogenetics, Drug metabolism  |
| Marja-Liisa Dahl, Prof MD            | Drug Interactions, Drug Evaluation and Information, Clinical pharmacogenetics, eHealth |
| Lena Ekström, Assoc prof             | Doping, Pharmacogenetics   |
| Erik Eliasson, Prof MD               | TDM, Clinical pharmacogenetics, Infectious diseases                                    |
| Magnus Ericsson, PhD                 | Doping tests, Analysis of doping substances  |
| Mia von Euler, Assoc prof MD         | RUM, Neurology, Gender medicine/pharmacology   |
| Lars L Gustafsson, Prof MD           | RUM, CP in developing countries, eHealth and decision support                          |
| Anders Helander, Prof                | Analysis of drugs of abuse, Clinical toxicology  |
| Paul Hjemdahl, Prof MD               | Drug evaluation, Cardiovascular drug therapy   |
| Helle Kieler, Prof MD                | Pharmacoepidemiology, Reproductive medicine  |
| Pierre Lafolie, Assoc prof MD        | Clinical trial methodology, Ethics, Education  |
| Rickard Malmström, Assoc prof MD     | RUM, Cardiovascular drug therapy   |
| Georgios Panagiotidis, Assoc prof MD | Education, Phase I-II Clinical trials  |
| Anton Pohanka, PhD                   | Analysis of medicines and drugs of abuse   |
| Anders Rane, Prof MD                 | Pediatric Clinical Pharmacology, Doping  |
| Staffan Rosenborg, MD                | Nephro pharmacology, Phase I-II Clinical trials  |
| Carl-Olav Stiller, Ass prof, MD      | Drug evaluation, Pain treatment, Psychopharmacology                                    |
| Björn Wettermark, Assoc prof         | Pharmacoepidemiology, Drug utilization   |

Eva Wikström Jonsson, Assoc prof MD

Drug evaluation, Respiratory pharmacology, Drug allergy

Sigurd Vitols, Prof MD

Drug evaluation, Cancer treatment

**About the centre:**

Clinical pharmacology in Stockholm has a long tradition in health-care services and in academia since its foundation by professor emeritus Folke Sjöqvist in the 1960s. The research is focused on studying inter- and intraindividual variability in drug response, from basic molecular mechanisms to clinical studies and epidemiology. The centre has a unit for phase I-II clinical trials and access to analytical expertise and equipment in one of the largest and most complete healthcare and R&D laboratories in Europe, including facilities for therapeutic drug monitoring, genotyping, analysis of drug of abuse and of doping agents. The research covers many pharmacotherapeutic areas such as cardiovascular, psychiatric, infectious, renal and neurological diseases, pharmacotherapy in pregnant women, children and in the elderly as well as public health. The research and education program is strengthened by its high degree of integration with the healthcare, exemplified by joint development, evaluation and research on Rational Use of Medicines, involvement in Drugs and Therapeutics Committee, structured introduction and follow-up of new medicines, development of knowledge-databases and daily patient-related consultancies provided by the laboratory and by the Karolinska Drug Information Centre. Clinical pharmacology provides weekly research seminars in English increasingly available over Internet. The clinical department has a staff of about 120, including 25 MDs, and the academic program involves about 20 senior scientists.

**Research expertise:**

Drug metabolism and drug-drug interactions

Pharmacokinetics and pharmacogenetics

Therapeutic drug monitoring

Analysis of drugs of abuse and clinical toxicology

Doping in sports and society

eHealth

Critical drug evaluation and work in Drug and Therapeutics Committees

Rational use of medicines

Drug safety

Clinical trials

Pharmacoepidemiology

Drug utilization

Undergraduate, postgraduate and continued education

**Opportunities on offer:**

Email/skype/Video conference advice on various aspects of expertise, training and education, clinical services

Seminars and other educational activities via video/internet

Potential to organize courses and training activities on demand

Research collaboration in areas of mutual interest

On-site training (if funding available)

### **Selected publications:**

Eriksen J, Gustafsson LL, Ateva K, Bastholm-Rahmner P, Ovesjo ML, Jirlow M, Juhasz-Haverinen M, Larfars G, Malmstrom RE, Wettermark B, Andersén-Karlsson E for for the Stockholm Drug and Therapeutics committee and the Regional Drug Expert Consortium. High adherence to the “Wise List” treatment recommendations in Stockholm: a 15-year retrospective review of a multifaceted approach promoting rational use of medicines. *BMJ Open* 2017; 7(4): e014345

Helander A, Bäckberg M, Signell P, Beck O. Intoxications involving acrylfentanyl and other novel designer fentanyl - results from the Swedish STRIDA project. *Clin Toxicol (Phila)* 2017; 55(6): 589-599

Stephanson NN, Signell P, Helander A, Beck O. Use of LC–HRMS in full scan-XIC mode for multi-analyte urine drug testing – a step towards a “black-box” solution? *J Mass Spectrom* 2017; May 10 [Epub ahead of print]

Graner S, Svensson T, Beau AB, Damase-Michel C, Engeland A, Furu K, Hviid A, Håberg SE, Mølgaard-Nielsen D, Pasternak B, Kieler H. Neuraminidase inhibitors during pregnancy and risk of adverse neonatal outcomes and congenital malformations: population based European register study. *BMJ* 2017; 356: j629

Komen J, Forslund T, Hjemdahl P, Andersen M, Wettermark B. Effects of policy interventions on the introduction of novel oral anticoagulants in Stockholm: an interrupted time series analysis. *Br J Clin Pharmacol* 2017; 83: 642-652

Linder C, Wide K, Walander M, Beck O, Gustafsson LL, Pohanka A. Comparison between dried blood spot and plasma sampling for therapeutic drug monitoring of antiepileptic drugs in children with epilepsy: A step towards home sampling. *Clin Biochem* 2017; 50(7-8): 418-424

Petersson J, Giske CG, Eliasson E. Standard dosing of piperacillin and meropenem fail to achieve adequate plasma concentrations in ICU patients. *Acta Anaesthesiol Scand* 2016; 60(10):1425-1436

Petros Z, Lee MM, Takahashi A, Zhang Y, Yimer G, Habtewold A, Amogne W, Aderaye G, Schuppe-Koistinen I, Mushiroda T, Makonnen E, Kubo M, Aklillu E. Genome-wide association and replication study of anti-tuberculosis drugs-induced liver toxicity. *BMC Genomics* 2016; 17(1): 755

Mukonzo JK, Bisaso RK, Ogwal-Okeng J, Gustafsson LL, Owen JS, Aklillu E. CYP2B6 genotype-based efavirenz dose recommendations during rifampicin-based antituberculosis cotreatment for a sub-Saharan Africa population. *Pharmacogenomics* 2016;17(6): 603-613

Godman B, Malmström RE, Diogene E et al. Are new models needed to optimize the utilization of new medicines to sustain healthcare systems? *Expert Review of Clin Pharmacol* 2015; 8: 77-94

Chang M, Tybring G, Dahl ML, Lindh JD. Impact of cytochrome P450 2C19 polymorphisms on citalopram/escitalopram exposure: A systematic review and meta-analysis. *Clin Pharmacokinet* 2014; 53: 801-811

Margolin S, Lindh JD, Thorén L, Xie H, Koukel L, Dahl ML, Eliasson E. CYP2D6 and adjuvant tamoxifen: possible differences of outcome in pre- and post-menopausal patients. *Pharmacogenomics* 2013; 14(6): 613-622.

Kieler H, Artama M, Engeland A, Ericsson O, Furu K, Gissler M, Nielsen RB, Nørgaard M, Stephansson O, Valdimarsdottir U, Zoega H, Haglund B. Selective serotonin reuptake inhibitors during pregnancy and risk of persistent pulmonary hypertension in the newborn: population based cohort study from the five Nordic countries. *BMJ* 2012 Jan 12;344: d8012.

Skogh E, Sjödin I, Josefsson M, Dahl M-L. High correlation between serum and cerebrospinal fluid olanzapine concentrations in patients with schizophrenia or schizoaffective disorder medicating with oral olanzapine as the only antipsychotic drug. *J Clin Psychopharmacol* 2011; 31(1): 4-9

Nokela M, Arnlind MH, Ehlers PO, Krakau I, Forslund L, Jonsson EW. The influence of structured information and monitoring on the outcome of asthma treatment in primary care: A cluster randomized study. *Respiration* 2010; 79: 388-394

Diczfalusy U, Nylen H, Elander P, Bertilsson L. 4beta-Hydroxycholesterol, an endogenous marker of CYP3A4/5 activity in humans. *Br J Clin Pharmacol* 2010; 71: 183-189

Hamberg AK, Wadelius M, Lindh JD, Dahl ML, Padriani R, Deloukas P, Rane A, Jonsson EN. A pharmacometric model describing the relationship between warfarin dose and INR response with respect to variations in CYP2C9, VKORC1, and age. *Clin Pharmacol Ther* 2010; 87: 727-734

Helldén A, Bergman U, von Euler M, Hentschke M, Odar-Cederlöf I, Öhlén G. Adverse drug reactions and impaired renal function in elderly patients admitted to the emergency department. A retrospective study. *Drugs Aging* 2009; 26(7): 595-606

Böttiger Y, Laine K, Andersson ML, Korhonen T, Molin B, Ovesjö ML, Tirkkonen T, Rane A, Gustafsson LL, Eiermann B. SFINX - a drug-drug interaction database designed for clinical decision support systems. *Eur J Clin Pharmacol* 2009; 65: 627-633

Schulze J, Lundmark J, Garle M, Skilving I, Ekström L, Rane A. Doping test results dependent on genotype of uridine diphospho-glucuronosyl transferase 2B17, the major enzyme for testosterone glucuronidation. *J Clin Endocrinol Metab* 2008; 93(7): 2500-2506