Department of Laboratory Medicine & Pathology
Division of Medical Biochemistry

POSTDOCTORAL CLINICAL BIOCHEMISTRY FELLOWSHIP PROGRAM

November 2015
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INTRODUCTION
Clinical Biochemistry is the branch of laboratory medicine concerned with the study of the measurement and interpretation of biochemical changes in human health and disease. The University of Alberta, Department of Laboratory Medicine & Pathology Postdoctoral Clinical Biochemistry Fellowship Program is a full-time, 2 year program that offers advanced training at the postdoctoral level for qualified individuals. Trainees will receive specialized training in clinical biochemistry with basic training in hematology, genetics, microbiology, and pathology. The start date for the Program is July 1.

Since the period of training in the Clinical Biochemistry Fellowship Program is two years, the objectives detailed should be considered the minimum required for satisfactory training in this discipline. It is intended that the fellow should attend and participate in appropriate rounds of other clinical disciplines and have informal discussions with clinical biochemists and pathologists. At appropriate times during training, they should also participate in coursework, seminars, and meetings. It is expected that during the training period the fellow will gain theoretical knowledge of clinical and biochemical disease, general laboratory procedures, instrumentation, and analytical methods, as outlined in the general and specific rotation objectives. By the end of training, the fellow will develop competence in the roles of medical expert, manager, communicator, collaborator, scholar, professional, and health advocate, meeting requirements of the CACB 2013 Postgraduate Training Program in Clinical Biochemistry syllabus.

Graduates of this fellowship program are eligible to apply for Certification by the Canadian Academy of Clinical Biochemistry (CACB).

APPLICATION AND SELECTION PROCESS
Please see Appendix A.

TRAINING SITES
Primary training locations for the Program will be within the Edmonton Zone with opportunities to visit external sites based on trainee interest and available funds. Through collaboration with government and private laboratories, the program offers a unique multidisciplinary and innovative trainee tailored program that provides opportunities to train in both hospital and community settings.

<table>
<thead>
<tr>
<th>TRAINING SITE</th>
<th>TYPE OF SITE*</th>
<th>CLINICAL BIOCHEMIST IN CHARGE</th>
<th>TOTAL PROFESSIONAL STAFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Alberta Hospital</td>
<td>(P)</td>
<td>Dr. Kareena Schnabl (on maternity leave until May 1/2016)</td>
<td>1 medical biochemist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. Anna Füzéry (acting director of the fellowship program until May 1/2016)</td>
<td>3 clinical biochemists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 toxicologists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 medical geneticists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 clinical immunologists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 hematopathologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 clinical microbiologist</td>
</tr>
</tbody>
</table>
DynaLIFE<sub>Dx</sub>  (P)  Dr. Matthew Estey  4 clinical biochemists 1 medical microbiologist  
Royal Alexandra Hospital  (P)  Dr. Anna Füzéry  1 clinical biochemist  
Small Suburban/Rural Hospital  (O)  Dr. Anna Füzéry  1 clinical biochemist 1 general pathologist  
Alberta Office of the Chief Medical Examiner (Forensic Toxicology Laboratory)  (O)  Dr. Craig Chatterton  2 forensic toxicologists  
Red Deer Regional Hospital  (O)  Dr. Allison Venner  2 clinical biochemists  
Calgary Laboratory Services  (O)  Dr. Isolde Seiden-Long  TBD**  
Metabolomics Centre (University of Alberta)  (O)  Dr. David Wishart  (analytical biochemist)  1 analytical biochemist  

* (P) = Primary Site, (O) = Optional Site    ** TBD = to be determined  

** CURRICULUM **

PDY-1  
The first year of the training program will emphasise the building of a solid theoretical clinical and analytical background, understanding how clinical/medical biochemists liaise with their clinical colleagues and laboratory staff, and understanding considerations that go into clinical and laboratory decision making. Trainees will gain this knowledge by observing day-to-day activities during their laboratory rotations, having discussions with clinical/medical biochemists and laboratory staff, attending laboratory and medical rounds, presenting at laboratory rounds, shadowing physicians, lecturing to laboratory staff, and by involvement in selected day-to-day activities, small laboratory projects, and mentor-designed translational research projects.  

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Duration</th>
<th>Location*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation and Safety</td>
<td>3 days</td>
<td>UAH</td>
</tr>
<tr>
<td>Preanalytical</td>
<td>4 weeks</td>
<td>UAH, RAH</td>
</tr>
<tr>
<td>Quality</td>
<td>4 weeks</td>
<td>UAH, DL</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>2 weeks</td>
<td>UAH, RAH</td>
</tr>
<tr>
<td>High volume general chemistry</td>
<td>6 weeks</td>
<td>UAH, DL</td>
</tr>
<tr>
<td>Point-of-care</td>
<td>4 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Method evaluation</td>
<td>4 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Management and LIS/HIS</td>
<td>3 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Protein electrophoresis</td>
<td>3 weeks</td>
<td>DL</td>
</tr>
</tbody>
</table>
The trainee is expected to spend 50% of their time in the laboratory and on their rotation assignments (see Appendix I for examples of the latter). The remaining time will be spent on:

1. Required coursework
2. Weekly seminars and monthly academic half days
3. Attending, preparing for, and presenting at rounds
4. Shadowing clinical staff in medical units
5. Small laboratory projects and translational research
6. Attending operational meetings
7. Attending scientific conferences

PDY-2

The second year of the training program will emphasize definition of clinical problems in context of the laboratory, interpretation of results, development of consultative skills, and awareness of proper test utilization. Towards the end of the year the fellow will have time for elective rotations in sub-specialty areas including toxicology (environmental, forensic) and genetics (cytogenetics, molecular pathology). Depending on funding, the fellow may choose to visit other clinical biochemistry labs within the province such as Red Deer Regional Hospital and Calgary Laboratory Services.

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Duration</th>
<th>Location*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass spectrometry</td>
<td>4 weeks</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>Prenatal and Newborn Screening</td>
<td>4 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Pediatric Biochemistry and Biochemical Genetics</td>
<td>4 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Hematology</td>
<td>4 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Immunology</td>
<td>4 weeks</td>
<td>UAH, DL</td>
</tr>
<tr>
<td>Molecular Diagnostics</td>
<td>4 weeks</td>
<td>UAH</td>
</tr>
<tr>
<td>Microbiology/Virology</td>
<td>4 weeks</td>
<td>PROV Lab, DL</td>
</tr>
<tr>
<td>Elective rotations</td>
<td>20 weeks</td>
<td>TBD**</td>
</tr>
</tbody>
</table>

The trainee is expected to spend 50% of their time in the laboratory and on their rotation assignments. The remaining time will be spent on:

*UAH = University of Alberta Hospital; RAH = Royal Alexandra Hospital; DL = DynaLIFE Dx
**TBD = to be determined
1. Weekly seminars and monthly academic half days
2. Attending, preparing for, and presenting at rounds
3. Shadowing clinical staff in medical units
4. Small laboratory projects and translational research
5. Attending operational meetings
6. Attending scientific conferences

**PROGRAM MENTORS**
The University of Alberta, Department of Laboratory Medicine & Pathology Postdoctoral Clinical Biochemistry Fellowship Program is unique in that through collaboration with government and private laboratories, we are able to offer a multidisciplinary and innovative trainee-tailored program that provides opportunities to train in both hospital and community settings. The medical/scientific mentors of our core program consist of 11 clinical/medical biochemists, 1 pathologist, 2 toxicologists, 4 medical geneticists, and 2 clinical/medical microbiologists. Elective rotations will provide the candidate with further opportunities to meet and work with additional mentors.

**Site 1: University of Alberta Hospital**

**Dr. Kareena Schnabl**, Clinical Biochemist
Joint Head, Newborn/Prenatal Screening and Biochemical Genetics Laboratory
Assistant Professor, Dept. of Laboratory Medicine & Pathology
Clinical Biochemistry Fellowship Program Director (Maternity leave until May 1, 2016)

**Dr. George Cembrowski**, Medical Biochemist
Division Director of Medical Biochemistry and Director of Point-of-Care Testing, Dept. of Laboratory Medicine & Pathology
Associate Professor, Dept. of Laboratory Medicine & Pathology

**Dr. Penny Colbourne**, Clinical Toxicologist
Clinical Professor, Dept. of Laboratory Medicine & Pathology

**Dr. Donald LeGatt**, Clinical Toxicologist
Clinical Professor, Dept. of Laboratory Medicine & Pathology

**Dr. Connie Prosser**, Clinical Biochemist
Clinical Professor, Dept. of Laboratory Medicine & Pathology

**Dr. Josh Raizman**, Clinical Biochemist
Assistant Clinical Professor, Dept. of Laboratory Medicine & Pathology

**Dr. Iveta Sosova**, Biochemical Geneticist
Acting Head, Newborn/Prenatal Screening and Biochemical Genetics Laboratory
Assistant Professor, Dept. of Laboratory Medicine & Pathology
Site 2: Royal Alexandra Hospital

Dr. Anna Füzéry, Regional Clinical Biochemist
Assistant Clinical Professor, Dept. of Laboratory Medicine & Pathology
Acting Clinical Biochemistry Fellowship Director

Site 3: DynaLIFE

Dr. Mathew Estey, Clinical Biochemist
Assistant Clinical Professor, Dept. of Laboratory Medicine & Pathology

Mr. Trefor Higgins, Clinical Biochemist
Director of Clinical Biochemistry
Clinical Professor, Dept. of Laboratory Medicine & Pathology

Dr. Karina Rodriguez-Capote, Clinical Biochemist
Assistant Clinical Professor, Dept. of Laboratory Medicine & Pathology

Dr. Dylan Thomas, Clinical Biochemist
Clinical Lecturer, Dept. of Laboratory Medicine & Pathology

MENTOR EXPECTATIONS
Throughout the fellowship mentors are expected to:

Prior to a Rotation

- Make the trainee aware of available resources and suggested activities to facilitate meeting rotation objectives.

During a Rotation

- Meet with the trainee on at least a weekly basis to discuss instruments, reagents, methodology, and quality control as well as matters relevant to the ordering, patient preparation and interpretation of investigations pertinent to each area of the laboratory.
- Discuss with the trainee all consultation requests related to the area.
- Involve the trainee in physician/patient/laboratory interfacing.
- Arrange opportunities for the trainee to visit and observe clinical units.

After a Rotation

- Complete an evaluation form of the trainee’s performance during the rotation and review this assessment with him/her.
- Send a copy of the completed evaluation form to the Program Director for safekeeping.
Throughout the two years of the fellowship mentors will also be expected to participate in tutorial of the fellow through weekly seminars, monthly academic half day sessions, and by guiding the fellow in research projects.

**FELLOW EXPECTATIONS**
Throughout the fellowship fellows are expected to:

**Rotations**
- Spend 50% of the time at the clinical laboratory rotations.
- Meet at least weekly with the supervising mentor.
- Complete rotations with a rating of “Good” or better.
- Gain exposure to analytes, diseases, and methods listed in the *CACB 2013 Postgraduate Training Program in Clinical Biochemistry* syllabus.
- Complete evaluation form at the end of each rotation.

**Coursework**
Attend courses (LABMP 500 and a 3 credit elective) and achieve a passing grade according to the standards set forth by the University of Alberta.

**Research**
- Participate in minimum one (1) research project per year.
- Impact of the research project on laboratory operations is desirable.
- Oral/poster presentation of research results is desirable.
- Design one (1) research project.

**Education**
- Complete literature searches and textbook readings.
- Present at least one (1) time per year at Clinical Biochemistry Monthly Rounds.
- Present at least one (1) time during the two years of the fellowship at the Department of Laboratory Medicine (LMP) rounds.
- Present at least one (1) time during the two years of the fellowship at clinical rounds.
- Present at least two (2) times per year for laboratory staff or Medical Laboratory Science students.

**Continuing Education**
- Prepare for and participate in weekly seminars and monthly academic half day sessions.
- Regularly attend a variety of rounds (LMP rounds, Clinical Biochemistry Monthly Rounds, clinical rounds, etc.).
- Regularly attend educational webinars.
- Attend the annual ASCC fall meeting.
- Attend the annual ASHT fall meeting and possibly the annual spring meeting as well.
- Attend the CSCC or AACC Annual Meeting each year.

Other
- Complete any remedial actions deemed necessary by the Clinical Biochemistry Fellowship Committee.
- Assume responsibility of the Biochemist-on-call, with back-up from a clinical/medical biochemist.
- Annually complete practice written and oral exams.
- Visit facilities (e.g. Edmonton Clinic, ICU, transplant and dialysis units).

EVALUATION
Trainees will be evaluated on an on-going basis to ensure that they are progressing as expected and to identify knowledge and/or experience gaps that require additional attention.

Trainees will be evaluated as they complete their rotations. At the end of each rotation, the mentor will fill out an evaluation form of the trainee’s performance during the rotation. The form is submitted to the program director for safekeeping and for use in the trainee’s quarterly or biannual review.

Trainees will also be evaluated semi-annually by the Clinical Biochemistry Fellowship Committee. This assessment will help direct learning needs of the trainee in preparation for the CACB written and oral certification examinations.

In addition to these evaluations, the trainee will also be asked to complete written and oral mock exams at the end of each year of the Program. The exams will be in the format of current CACB exams and will be used to assess the trainee’s knowledge as well as to provide practice in completing such exams. Mentors will be asked to submit questions for these exams as well as participate as examiners.

REMEDIATION
Trainees accepted into the Postdoctoral Clinical Biochemistry Fellowship Program are expected to meet or exceed all Program requirements. Substandard performance will be identified through post-rotation evaluations, informal feedback from mentors and laboratory staff, and semiannual assessments. Examples of substandard performance include:

(i) Failing to achieve a passing grade in coursework according to the standards set forth by the University of Alberta.
(ii) Ratings of “Fair” or “Unsatisfactory” after completion of a rotation.
(iii) Failing to achieve a grade of at least 70% on the practice written and oral exams at the end of each year of the Program.
(iv) Rude behavior toward mentors and/or laboratory staff.
If a trainee performs below Program expectations, efforts aimed at rectifying deficiencies will be initiated by the Program Director in consultation with the Fellowship Committee and, if appropriate, Program mentors. Remedial processes will be dependent on the particular deficiency but may include:

(i) Completion of extra assignments that are related to a particular deficiency;
(ii) Additional rotation time in a particular area of the laboratory;
(iii) Auditing of a failed course or of a related course.

Any such remedial processes will be followed up with an assessment of the trainee’s improvement or lack thereof. A trainee will only receive a Program certificate if s/he has satisfactorily completed all requirements of the Program including remedial processes.

SUCCESSFUL PROGRAM COMPLETION
Successful completion of the Program entails meeting the following requirements:

1. Completion of all rotations with a rating of “Good” or better from mentors.
2. Completion of required coursework with a minimum grade of 70%.
3. Completion of at least two research projects (one per year).
4. Regular attendance at a variety of rounds.
5. Demonstration of a solid foundation in the analytes, methods, and skills listed in the *CACB 2013 Postgraduate Training Program in Clinical Biochemistry* syllabus. The trainee will be deemed to have a solid foundation if s/he obtains a grade of at least 70% on the practice written and oral exams at the end of each year of the training program.
6. Presentation at the following:
   a. Clinical Biochemistry Monthly Rounds (at least once a year)
   b. University of Alberta Department of Laboratory Medicine and Pathology Rounds (at least once in the two years of the training program)
   c. other clinical rounds (at least once in the two years of the training program)
   d. medical laboratory staff CME sessions (at least once a year)
7. Demonstration of teaching and/or mentoring experience. The trainee may either mentor a medical laboratory science student as they complete their fourth year research project or s/he may choose to develop and lead at least one case discussion in the Department of Laboratory Medicine and Pathology’s MLSCI460 course.
8. Satisfactory completion of all remedial processes.
9. Receipt of an overall rating of “Satisfactory” from the Clinical Biochemistry Fellowship Committee at the end of their fellowship.
APPENDIX A - APPLICATION AND SELECTION PROCESS

Individuals interested in the fellowship program are invited to submit an application package that consists of a completed application form (see last two pages of this Appendix), a curriculum vitae, a personal letter of interest, academic transcripts and documentation of awarded degrees, a TOEFL score (if applicable), and three references.

Applicants will be evaluated by the Clinical Biochemistry Fellowship Committee and possibly additional clinical biochemists and/or toxicologists in Edmonton according to the following criteria:

(a) The applicant must have educational qualifications in biochemistry, analytical or pure chemistry, or related life sciences and earned a PhD, MD, or equivalent degree from a university belonging to the Association of Universities and Colleges of Canada, from a Canadian school of medicine, or from an equivalent international institution. Credential assessment is required for university degrees from outside Canada or the USA.

(b) Knowledge of biochemistry, physiology, analytical chemistry, molecular biology, immunology, and genetics is ideal.

(c) Exposure to some, or all, of the disciplines of anatomy, pharmacology, toxicology, pathology, hematology, microbiology, biophysics, epidemiology, and biostatistics is helpful.

(d) Grades in relevant courses and overall average during graduate studies (min B+).

(e) The applicant must demonstrate ability for independent research and scholarly activity. Research record, productivity, and relevance of publications to clinical biochemistry.

(f) Curriculum development or teaching experience.

(g) Relevant experience in clinical biochemistry is desirable (e.g. medical laboratory technologist, laboratory scientist, research assistant, or research associate).

(h) Strong leadership skills, interpersonal communication skills, and community service are important secondary considerations.

(i) Enthusiasm and commitment of the applicant to the field of clinical biochemistry.

(j) Knowledge of the career, Edmonton training program, and Alberta; evidence of visits to clinical laboratories, meeting clinical biochemists or job shadowing.

(k) Professional career goals fit with the profession of a clinical biochemist.

(l) Professionalism in working with teams of health care professionals.

(m) The applicant has Canadian citizenship or landed immigrant status.

A combination of the initial application package, telephone interviews, and on-site interviews will be used for selection of the successful applicant to be admitted into the Program.

For information on the application deadline please contact the Program Director (kareena.schnabl@ahs.ca) or Program Acting Director (anna.fuezery@ahs.ca).
POSTDOCTORAL CLINICAL BIOCHEMISTRY FELLOWSHIP PROGRAM

APPLICATION FORM

Part 1: Personal Information

Last Name: ___________________________ First Name: ___________________________

Current Address: ________________________________________________________________

Permanent Address: ______________________________________________________________

Home and Business Phone Numbers: _________________________________________________

Email: _____________________________________________________________

Citizenship: □ Canadian Citizen □ Permanent Resident

□ Other (specify)

First Language: □ English □ French

□ Other (provide TOEFL)

_________________________________ _________________________________
Date Applicant Signature

□ I permit the distribution of information contained within this application form for the purpose of application to the Postdoctoral Clinical Biochemistry Fellowship Program, University of Alberta, Faculty of Medicine & Dentistry, Department of Laboratory Medicine & Pathology.
Part 2: Personal Statement
State your short and long term career goals. Explain why you are interested in applying to this Clinical Biochemistry Fellowship Program.

Part 3: Covering Letter and Curriculum Vitae (CV)
Enclose a copy of your current CV. Please ensure to include the following information:

(i) Education
   - Undergraduate and doctoral or medical degrees
   - Postdoctoral training or specialty certifications

(ii) Clinical Experience

(iii) Teaching Experience

(iv) Research Experience

(v) Other Work/Volunteer Experience relevant to Clinical Biochemistry, Hematology, Molecular Biology or Microbiology

(vi) Publications including papers and abstracts

(vii) Awards and Accomplishments

Part 4: References
Please provide the names, positions, mailing addresses and email addresses of three referees whom you have asked to write a letter of support for your application.

1.

2.

3.

Part 5: Application Package

☐ Application form
☐ Covering letter and curriculum vitae
☐ Three letters of support
☐ Copies of undergraduate and graduate transcripts, medical degrees, specialty certificates etc. If education was obtained at an institution outside the USA and Canada, an evaluation must be submitted from the credentials evaluation agency.

Because we receive many applications for the program, the Postdoctoral Clinical Biochemistry Fellowship Committee will review these materials to determine eligibility for the program. The top three applicants will be contacted for an interview and the application package of the Strongest candidate will be forwarded to the Postgraduate Medical Education Committee for funding consideration.