



**The Kidney Research Scientist Core
Education and National Training Program**

Core Curriculum Document

Revised July 2023

1. INTRODUCTION

Since its inception, the mission of the Kidney Research Scientist Core Education and National Training Program (The KRESCENT program) has been to recognize, cultivate and support outstanding kidney researchers across Canada at the graduate, postdoctoral and new investigator levels. The Core Curriculum emphasizes development of research excellence, trans-disciplinarity and collaboration in a small group setting as well as self-guided learning outside of annual workshops.. Central to the KRESCENT Program mandate has been the establishment of a mandatory, bi-annual Core Curriculum workshop.

The Core Curriculum of the KRESCENT program has been in constant evolution since program inception in 2005, based on stakeholder feedback to address the needs of those with lived experience whose health we seek to advance, as well as feedback from KRESCENT alumni and partners. Currently, the program consists of multiple interdisciplinary educational activities and exercises specifically designed to accomplish two distinct but interconnected ends: first, the development of essential professional skills crucial for successful careers in kidney research; and secondly, the establishment of a collaborative national research network among burgeoning kidney scientists in Canada to foster meaningful knowledge translation for the improvement of patient care and outcomes in priority areas of kidney research. As such, the Core Curriculum affords a unique interactive learning opportunity unparalleled in any other forum at present.

The Core Curriculum is designed to complement core course work / degree programs in research design, methodology, and other core content areas which trainees are engaged in through their respective host institutions. It is also complementary to the trainee-specific research project(s), which will continue to be developed locally, either independently (in the case of New Investigator Awardees), or in conjunction with the local research supervisor (in the case of Fellowship or Doctoral trainees).

The Core Curriculum includes:

- 1) Knowledge Acquisition: Bi-annual Core Lecture Series held at workshops
- 2) Knowledge Application and Integration Exercises:
 - 2.1 Critical appraisal of journal articles (basic, clinical, allied health science):
 - a) as part of workshop exercises and
 - b) as formal members of the CJKHD (Canadian Journal of Kidney Health and Disease) editorial board.
 - 2.2 Journal article writing on a review topic describing translational research in a prescribed area. This exercise, for first year KRESCENT participants, develops manuscript writing skills and collaboration on translational themes amongst a group of trainees with varied backgrounds.
- 3) Grant-writing and peer review exercises, directed at trainees beyond year one:
 - 3.1 Participation in mock grant peer review panels, which use the same peer review processes as KFOC or CIHR;
 - 3.2 Roles as either first or second reviewers; or Chair/Scientific Officer for the Grant review committee.
 - 3.3 Possibility to Participate as a reader or third reviewer (post-doctoral fellows) or a review panel member (New Investigators only) in the KFOC Kidney Health Research Grant Competition Scientific Peer Review Committee (previously called Biomedical Research Operating Grant peer review panel.) Please note that only full reviewers will be invited

to in person review panels. In the case of virtual reviews, all members, including readers, may be invited to attend the review panel.

- 4) Presentation skills:
 - 4.1 Slide presentations
 - 4.2 Speaking skills
 - 4.3 Presentation of data for oral vs. written venues
 - 4.4 Presentations to lay people and/or the public
- 5) Chairing of workshop sessions (introductory comments, ensuring time constraints upheld, fielding questions)
- 6) Career Development Sessions: These sessions typically occur at the start of every workshop, and a variety of topics is covered during the 3-year cycle of training (e.g. time management, gender issues in research, career promotion, how to secure an academic position, challenges facing new investigators, practical advice on setting up your lab). The importance of maintaining work-life balance and mental wellness/coping strategies are emphasized as crucial elements of career success, and training opportunities in these topics are provided. Content experts from the Canadian Nephrology, transplant and mental health community are typically invited to chair these sessions, and trainees are active participants in discussion/questions. New sessions may additionally include representation from private industry supporters, start-ups and not for profits, allowing for additional career development possibilities and support.
- 7) Patient-Oriented Research: These sessions develop skills in communicating in plain language, knowledge translation, and learning how patients can participate in all stages of research from priority setting through to communicating the outcomes of a project. The KRESCENT program values the feedback of those with lived experience and includes their valuable experience in all phases of the program, including peer review, workshop presentation, and grant/manuscript review.
- 8) Mentorship: Program mentors are assigned to all New Investigators in KRESCENT (see description below).
- 9) OCAP and/or San'yas training: It is mandatory that all New Investigators and Post-Doctoral Fellows take either the *Fundamentals of OCAP* (Ownership, Control, Access and Possession, and how it pertains to principled research, data sovereignty, and information governance with respect to First Nations) and/or *San'yas training* (Indigenous Cultural Safety Training). The KRESCENT program encourages all fundamentals of equity, diversity and inclusion and will facilitate and pay for the cost of these programs for all trainees.
- 10) As part of KRESCENT's funding is through CIHR, there are a subset of required CIHR based training modules that must be completed throughout the KRESCENT program, including sex and gender principles amongst others. Links to these courses will be provided through the KRESCENT program and trainees must provide proof of completion.

Participation in the Core Curriculum:

The Core Curriculum is tailored to the special talents and needs of those outstanding candidates accepted into the KRESCENT program. All KRESCENT program awardees must participate and successfully complete the Core Curriculum as a requirement for their continued KRESCENT program support.

Attendance at all workshops (twice yearly) is mandatory (barring extenuating circumstances). Curriculum components that are not completed may result in non completion of the program.

For the KRESCENT program awardees, expenses related to the Core Curriculum will be covered (e.g. flights, accommodation, according to The Kidney Foundation of Canada reimbursement guidelines).

Tracking of curriculum components will be through the LMS RISE platform. Instructions will be provided.

Introduction and Graduation events:

New applicants to KRESCENT and their supervisors will be invited to attend a virtual introductory KRESCENT meeting at the start of the program, to outline the program requirements, the role of the supervisor and mentors, and to ask any questions related to the program, timeline, or requirements.

At the completion of the program, KRESCENT graduates will be asked to participate in an exit presentation event, where they will give updates both on their research, and on the KRESCENT program experience. Supervisors will be invited and are expected to attend this event if possible.

****supervisors:** please note that the introduction event is virtual and a virtual option will be available for the exit presentation event.

KRESCENT Program Workshop Agenda

The KRESCENT program will do its best to set dates for the workshops and other assigned activities will be set at least 6-9 months in advance; with 'save the date reminders sent to the participants. Note that it is the responsibility of the KRESCENT participant to inform their supervisors/ colleagues of the need to attend.

For exact dates, please contact the KRESCENT program directly or see the KRESCENT website for details.

2. OVERVIEW OF THE KRESCENT CORE CURRICULUM

A) Workshop Key Content: Knowledge Acquisition, Knowledge Application and Integration Exercises

Knowledge Acquisition Objective: Core lecture series to ensure that all participants acquire knowledge specific to kidney research, encompassing the four research pillars of the CIHR (Biomedical, Clinical Sciences, Health Systems, and Population Health). Workshops will serve to complement existing lecture series that may be available at each institution.

Knowledge Application and Integration Exercises Objective: To promote independent learning and acquisition of core skills related to the conduct of kidney research, irrespective of content area or perspective (MD, allied health, basic or clinical researcher). To promote transdisciplinary exchanges within a structured framework, facilitating communication and collaboration across themes.

- Fall workshops will be held in November or December of each year and will serve as an intensive introduction to the objectives and mission of the KRESCENT program,

as well as offering the first series of Core Lectures (Knowledge Acquisition) (trainees technically begin the program on July 1 of each year, when funding starts).

- A second face-to-face workshop will be held at the Canadian Society of Nephrology (CSN) Annual Meeting, held in April or May of each year. This will serve as a venue for a second set of Core Lectures. The Core Lecture Series will encompass a topic cycle; and will be focused around a specific kidney research theme (e.g. acute kidney injury, transplantation, end-stage renal disease care, tubular disorders, GN, development, etc) each year. The fall workshop addresses the theme from more of a 'bench to bedside' approach, while the spring workshop focuses on population health implications and health policies.
- After the first year, the annual fall meeting will also serve as an evaluative session.
- At the workshops, in addition to Core Lectures, trainees will receive additional orientation to the program (structure, governance, expectations, evaluation), and meet the mentors and other trainees.
- Irrespective of research theme (i.e. clinical, basic, or other research theme), these Core Lectures will be relevant to all disciplines in kidney research and will be delivered by content experts.
- At each workshop, the Core Lectures will be accompanied by introduction to the relevant assignments:
 - First Year participants: Collaborate on a research problem / review area relevant to the lecture / theme material. This will result in a publication worthy manuscript which will be submitted to the CJKHD.
 - Other participants: Critical review of journal articles submitted by presenters, and lead or engage in critical appraisal discussion; preparation of presentation for the group to synthesize the discussion / key points.
- Workshops will generally feature Career Development Sessions, focusing on selected topics such as Grant-Writing Skills, Time Management, Career Planning, Work-Life Integration/Balance and others.
- Selected workshops will feature sessions on Research Methods (biomedical, clinical, health services or qualitative research), and presentations by industry sponsors that will focus on topics meant to support collaborative and/or translational research.
- Workshops will also feature selected research-in-progress presentations from the trainees, as well as presentations on overall research directions and strategies (from senior trainees).
- The fall workshop will incorporate an introduction to the first collaborative integrating exercise (previously called the Transdisciplinary Research Challenge (TDR), but now organized as a collaborative review paper focused on the area of interest. (for first year trainees)

B) Knowledge integration and Application: Journal article reviews.

- 1) Critical appraisal of journal articles in workshops
- 2) Review of journal articles in timely manner for CJKHD (requires written feedback to authors and integration of # of different skills, including critical appraisal)

The purpose of these complementary exercises regarding journal articles (those already in print and those submitted by trainees), is to cultivate integration of scientific knowledge, methodology knowledge, and critical appraisal skills in trainees. Within the workshop venue, small group discussion of journal articles will be held amongst trainees, facilitated by a senior research scientist and content expert (typically the workshop invited speaker, often a journal editor). Examples of topics for discussion include: quality of figures or tables in conveying knowledge, clarity of writing, key messages, methodologic approaches, etc.

The formal review of journal articles submitted to CJKHD will similarly serve to provide exposure to scientific articles in trainees' field of interest or related field of interest. Furthermore, feedback from KRESCENT leadership on reviews will help trainees further cultivate courteous, constructive peer review skills. Of added benefit, trainees can acknowledge these peer review activities as professional CV line items (E.g. Editorial Board member of CJKHD), thus further promoting their academic career advancement.

C) Review Article demonstrating synthesis of current state of nephrology research within specific theme:

This unique aspect of the Core Curriculum offers an opportunity for first-year trainees to address a broad-based issue in kidney research, which encompasses at least three CIHR themes.

The goal of this exercise is to develop not only content knowledge, but also experience developing a multi-author paper, addressing the issue of authorship contributions, and demonstrating an understanding of the topic area. The work will be submitted to CJKHD and thus should be of high quality. The exercise will be mentored by KRESCENT faculty and will culminate in a publication. The manuscript will be reviewed by other KRESCENT members for feedback at the April/May Workshop.

Working in teams, author trainees will collectively develop a publishable research manuscript proposal that identifies knowledge gaps and integrative, multidisciplinary methodology to address those gaps. Knowledge or solutions generated will ideally focus or highlight areas of interest of the team involved in the project, but each must demonstrate some trans-disciplinary / integration aspect. Please note that it is possible that more than one paper would be generated by the group,

One of the desired outputs from these papers, aside from the publication itself, could be a roadmap of a proposed research agenda in that area, or ultimately a grant proposal for review at subsequent meetings. Research findings or gaps could also be used to emphasize advocacy efforts, or highlight areas in which research funding could be allocated. It is believed that these publications may provide good 'groundwork' for KRESCENT participant grant proposals, or others. Output from the exercise will also include a 15-minute presentation to the KRESCENT participants at the Spring workshop, and formulation of an abbreviated mock grant proposal.

General Objectives of Transdisciplinary Review Manuscript Exercise:

- To develop skills in communication and collaboration between disciplines involved in kidney-related research.
- To foster an appreciation of the importance of transdisciplinary input when addressing either biomedical, clinical, health services, or population health kidney research problems.

- To understand and share methodologies which traditionally have been ‘theme-specific’.
- To enhance skills that will facilitate the development of transdisciplinary grant initiatives in the future.
- To improve manuscript and potentially grant writing skills.
- To gain an understanding of complexity of multi-author publication logistics.

D) Grant-writing and Peer Review Exercises

Trainees in the KRESCENT Program (with the exception of first year postdoctoral fellows or allied health fellows) will submit Research Grant applications or Manuscripts for review. All fellows will participate in written and oral critical peer review of draft grant applications and manuscripts.. Manuscript discussions (held in Spring workshops) will be guided by senior research scientists serving as Associate Editors or Deputy Editors of CJKHD to help trainees cultivate courteous constructive peer review skills. Reviewers’ comments will be shared with trainees, providing valuable peer-review feedback.

E) Mentoring Program

An important aspect of the KRESCENT program is a built-in mentoring system that will facilitate career development. Trainees at the Fellowship level will meet with the Program Mentors at the twice-yearly workshops and interact in a Career Development Workshop setting. New Investigator Awardees, on the other hand, will be paired with a specific Program Mentor, expert in his/her field of research (i.e. biomedical, clinical, health services, population health).

Accordingly, the KRESCENT program provides level-specific mentorship, which does not conflict with the important mentorship role of the local research supervisor during the Fellowship period. The Program Mentors are complementary to the local Research supervisor. Program Mentors will receive progress reports on individual trainees, in the form of an Individual Development Plan (IDP). These plans will be filled out by the trainee prior to the mentorship meetings, and updated as they progress through the program.

Thus, for Fellowship-level trainees, the roles of the KRESCENT program mentor and local Research supervisor are distinct and complementary:

The Local Research Supervisor directs all of the research work relevant to the trainee’s research program; and is responsible for guidance and project oversight, per university roles.

The KRESCENT Program Mentor:

- ensures that the goals of the KRESCENT program are met,
- facilitates changes, if needed, to optimize training,
- facilitates career transition counselling, negotiation of academic appointment, consideration of options for Faculty positions, etc.

During the first three years of a faculty position (New Investigator Awardees), it is expected that the candidate and designated Program Mentor will interact at least two times a year. The mentor will advise the candidate with regards to the provision of conditions/resources required to sustain an independent career in research. If required, the mentor will suggest changes to

the candidate or will help the candidate interact with his institution in order to secure, on a long-term basis, the optimal research conditions. More specifically, the mentor will assist in:

1. Reviewing the percentage of protected time for research required and provided.
2. Reviewing the resources available to the candidate to assist in development of the research program.
3. Helping the candidate to evaluate the quality of the research environment, and suggesting changes that might be required, including development of collaborative relationships, which might foster knowledge translation.
4. Providing assistance and guidance with regards to grant writing, manuscript preparation, and research directions.

Appendix A

TABLE 1: Three-Year Core Curriculum Template, and Level-Specific Requirements

Program Component	Yr 1	Yr 2	Yr 3
Introductory seminar	M x 1		
Core Lectures/Presentation of work	M x 1		M x 1*
Critical Appraisal Journal articles in workshops**	M x 2	M x 2	M x 2
Review of Journal articles for CJKHD	M x 1	M x 1	M x 1
Trans-disciplinary Review Exercise and manuscript	M x 1	O	O
Grant writing and/or peer review**	M x 1	M x 1	M x 1
Chairing of Session at Workshop	M x 1		
San'yas or OCAP training	M x 1		
Writing plain language summaries of journal or grant abstracts	M x 1	M x 1	M x 1
Exit Presentations			M x 1*

M = mandatory (for Core Lectures, M x 2 indicates requirement for attendance at 2 workshops per year)

O = optional (discretion of trainee)

* trainee must deliver core lecture, focused on overview of his/her research program and potential for knowledge translation.

** please note that journal articles and grant evaluation are done every second year with one or the other taking place at the spring workshop. Trainees are required to participate in the exercise that is happening each year (with the exception that first year postdoctoral fellows do not need to submit a research grant/journal article, but will participate in the review/discussion)