Donders Binkhorst Travel Grant

Name of Applicant: Haagdorens Michel

Study: Maladies du segment antérieur et cornée - CHUM

Training Host Centre Details:
Centre Hospitalier de l'Université de Montréal (CHUM)
1000 Saint Denis St,
H2X 0C1 Montreal (QC)
Canada

Centre Hospitalier Sainte-Justine (children's hospital of CHUM)
3175 Chem. de la Côte-Sainte-Catherine
H3T 1C5 Montréal (QC)
Canada

Host Centre Supervisors/Trainers Names:
Dr. Mona Harissi-Dagher
Dr. Marie-Claude Robert (research and clinics)
Dr. Louis Racine
Dr. Laura Ardman-Segal
Dr. Samir Jabbour
Dr. Paul Thompson
Prof. Dr. May Griffith (research)
Dr. I Brunette (research)
Mostafa Zamani Roudbaraki (research)

Duration of training: 18 months
Date Awarded Training : 01/07/2023
Start of Training : 01/07/2023
Finish of Training : 31/12/2024
Report number: Final report

Optional:
email address and social media contact

E: michelhaagdorens@gmail.com
LinkedIn: Michel Haagdorens

Introduction, Objectives and Goals *Briefly introduce your training programme, including its purpose, duration and the organisation/institution where it took place. Also state your specific objectives and goals for your training*

This 18 month training was coordinated by the Université de Montréal, with the main activity and studies being performed at the Université de Montréal, Centre Hospitalier Universitaire (CHU) de Montréal (adults) and the CHU Sainte-Justine (children). Part of the training consisted of clinical and surgical training in which students develop expertise in the diagnosis and medical and surgical treatment of a wide range of anterior segment and cornea disorders and external eye diseases, from every-day pathology to highly complex referrals. Surgical training includes penetrating grafting, anterior segment and ocular surface reconstruction (stem cell transplantation), sutured intraocular lens implantation, lamellar grafting, keratoprosthesis implantation, as well as the treatment of ocular surface tumours, keratectomies and corneal crosslinking.

The student took dedicated time in research projects that were conducted in collaboration with the UMC Utrecht (UMCU), Oogziekenhuis Rotterdam (OZR), and Universiteit Antwerp (UA)

Training Supplementary Activities *Describe the various activities and projects you were involved in during the training. Highlight any research, clinical work or educational initiatives you undertook. Discuss any conferences, workshops, or training sessions you attended or presented at.*

The main activities of the student focused on gaining expertise, in depth learning during internships, and partaking in scientific research that were highly infused with active teaching (see respective sections). Apart from these activities the student collaborated in various extra-curricular activities.

Teaching:
My passion for teaching reflected in the effort I happily dedicated to training peers. The student was actively involved in training younger peers. I organised cornea rounds and discussions for residents and medical students, and engaged into organising surgical wetlabs at the department. Furthermore, I was a wetlab instructor at two conference (see below). Finally, I took part in the journal clubs that were organised bi-weekly, and presented on various anterior segment topics. All of these activities were encouraged through the highly teaching minded environment of the University Centre.

Research/Publications:
The student has taken part in various research projects:

- A case report on the orphan disease 'KGB syndrome' has been submitted to American Journal of Ophthalmology Case Reports, and is currently under review.
- The student has initiated 2 restrospective studies on the application of the Boston Keratoprosthesis. Both of the studies arose from relevant clinical questions proposed by the student . Prof. Dr. M. Harissi-Dagher, a global leader in the application of the Boston keratoprosthesis, is the supervisor for both of the projects. In one study, we established a multi-center study with MEEI (Harvard University) and UCLA to investigate the interaction of Boston keratoprosthesis implantation and glaucoma surgery. Results are expected to be published in 2025.
- I have been in a decade-long collaboration with Prof. Dr. May Griffith, from the Université de Montréal, in which we are investigating (i) the development of a tissue engineered biocornea as well as (ii) biological corneal inlays/onlays for refractive surgery. During the training , I was

an investigator of a mini-pig study to test a liquid biocornea (currently post-processing stage). Results are expected to be published in 2025.
- Finally, I am co-investigating the surgical outcome of lamellar cornea grafting, to indicate predictive measures of graft failure, in a retrospective study.

International mobility:
During my training, and as part of the research projects I am collaborating in, I undertook a 1 week observership at the Hôpital Ophtalmique Jules Gonin (Lausanne, Switzerland). This observership solidifies expansion of the international network on biocornea research that I am collaborating in, and more importantly guarantees continuation of the project in Europe. In my future position at OZR, I will continue my post-doctoral research in anterior segment regeneration. A collaboration with the Hôpital Jules-Gonin adds further expertise and resources to the team, in which we can bridge and cross-integrate the knowledge and expertise on the domain of cornea and retina stem cell research.

Conferences:
Various conferences were attended during the training , all in which the student actively took part as a speaker/instructor:

COS (Canadian Ophthalmology Society) 2025 meeting – **Speaker** (planned)

ASCRS 2025 – **Speaker** (planned)

AAO 2024 – **Speaker**

COS 2024 meeting – **Wetlab instructor** (cornea suturing) ASCRS 2024 – **Wetlab instructor**

(DMEK/DSAEK)

ESCRS 2023 - **Speaker**

26th Annual meeting Vision Health Research Network (Québec, Canada) - **Speaker**

Skills and knowledge acquisition *Outline the new skills, techniques and knowledge you gained during the training . Also discuss how these skills align with your career goals and how they will benefit your future practice or research*

During the training, I gained advanced expertise in complex anterior segment case management and refractive surgery. A range of medical and surgical treatment modalities were mastered, including complex cataract surgery, including alternative IOL fixation, complex cornea grafting, keratoprosthesis implantation, anterior segment tumour management, iris surgery, limbal stem cell transplantation and laser/refractive surgery. These skills and knowledge will be applied in my future position as an anterior segment surgeon and staff member in a 3rd/4th line hospital setting in Antwerp (see below: future plans). In this position, I will be focusing on anterior segment pathology, including various orphan diseases. Furthermore, transfer of the mastered skills is guaranteed given my dedication to teaching and training of younger peers.

The training in Montréal, came hand in hand with secondary milestones gained in terms of project management, communication, networking, research efficiency, multi-tasking and entrepreneurship. I gained further executive insights in the organisation of an OR, a large ophthalmology service, and an outpatient clinics. All of these skills undoubtedly will further shape my career and will help me form

my daily work routine in which I will be balancing clinics, anterior segment and refractive surgery, research and teaching.

Mentorship and collaborations *Acknowledge and express gratitude to your mentors, supervisors and colleagues who supported you during the training . Describe the mentorship you received and how it positively influenced your professional development. Highlight any collaborations or interdisciplinary work you engaged in*

I cannot thank the supervisors of the Université de Montréal enough for their support and dedication to be exceptional mentors, teachers and colleagues. In particular, their teaching-minded approach on complex surgical cases, ease of transfer of knowledge, and devotion to one-on-one teaching are what made this training to the success that I experienced. In addition to being extremely intelligent and well-dextrous surgeons, the supervisors have the unique ability to provide you with the necessary confidence to take on complex anterior segment cases with ease. They provided a perfect combination of the much needed mental support, which at times, as a student , is as essential as the transfer of knowledge and skills. They have all formed and perfectioned my training in their unique way, and helped me in becoming an aspiring young ophthalmologist and eye surgeon. Having seen their devotion to hands-on training, I aspire to lay the same passion in teaching future pupils, and continue the chain of knowledge/skill transfer in Europe.

During the training , various networking and endorsement opportunities have been created by the supervisors. These occasions have further expanded my research network to Jules-Gonin (Lausanne, Switzerland), UCLA (California, USA), MEEI – Harvard (Massachusetts, USA), and more locally to the various university centres in the province of Québec and Ontario. Through the training, I received endorsement as a wetlab instructor for the ASCRS 2024 and COS 2024 conferences. For detailed collaborations see section 'Training Supplementary Activities'.

Contributions and achievements *Describe any notable contributions you made during the training such as publications, presentations or innovative projects. Discuss any awards, grants or recognition you received during the training*

For publications, given presentations, research projects and conferences, please see above at 'section Training Activities'.

The research I am collaborating in mainly revolves around more elaborate research projects in which data analysis is planned to take an extended period of time. Given the nature of my research (i.e. a 9 month animal study; and a 15 year retrospective single-center and multi center study), various scientific presentations and publications are expected to emerge in 2025-2026. The long-term scientific output of the research projects I am involved in, highlights the durability and longevity of the research collaborations I endeavour in.

No further awards or grants have been awarded to the student since commencing the training on July 1st 2023.

Challenges and lessons learned *Reflect on any challenges or obstacles you encountered during the training and how you overcame them. Discuss the valuable lessons learned from these experiences and how they shaped your growth*

Clinical and scientific exposure has been impeccable with a well-embedded teaching-minded approach throughout the training. The integrated training has been well above expectation, and

surgical exposure has been well-compensated, all the while maintaining clinical and scientific exposure at an as-excellent level. The supervisors have shown to be remarkably involved mentors throughout this process. My direct, rational and no-nonsense communication during the crisis situation has helped me in gaining and maintaining their trust and respect throughout this challenging transition.
Keeping in mind the importance yet delicate matter of the subject, I strongly believe that I handled the situation in the most optimal manner. I have grown both professionally and personally throughout the process, and am very grateful that (i) corrective measures were installed and monitored, and (ii), more importantly, that the strong bond between student and mentor/supervisor intensified during this challenging period. My communication, crisis/conflict management, and hence leadership skills have grown tremendously through this unfortunate situation. I am certain that these skills will benefit my future professional endeavours and possible obstacles.

Impact and future plans (mandatory) *Describe the impact the training had on your personal and professional growth. Discuss how the experience gained aligns with your long-term career plans and how you intend to apply the knowledge and skills acquired*

During the training, I foremost gained exceptional knowledge and skills as I received hands-on training from internationally-renown attendings in the niche domain of complex anterior segment pathology management. The cross-integration of research, clinics, and surgery combined with high-volume exposure, have additionally pushed my management, communication and leadership skills forward. The readily available networking opportunities have expanded my future collaborative network tremendously. Furthermore, the training polished my efficacy and clinical decision making, as well as my crisis management skills. All of these skills combined, as well as the network I expanded, will be exploited and further enhanced during my future career. These highly valued skills will be translated through the various roles that I will take up as an MD, including being a clinician, researcher, supervisor, manager, communicator and (project) leader.

In 2025, I will take on a position as a staff member at the OZR hospital in Rotterdam, the Netherlands. This position will allow me to apply the gained clinical and surgical skills in a high-end 3rd and 4th line setting that provides cutting-edge health care to complex ophthalmology cases. Furthermore, I will be able to exploit my passion for teaching to the fullest.

My position at OZR will be intertwined with a position at the closely affiliated Rotterdam Ophthalmology Research Institute (ROI) and Antwerp University (UA). The close collaboration between the three centres additionally allows me to (i) continue and expand my post-doctoral research in the various domains of anterior segment pathology and surgery, (ii) continue and expand international collaborations on tissue engineering and biomaterial development, and (iii) perform laser and refractive surgery. I aspire to continue my research and facilitate UA/ROI and OZR into taking a leading role in the international consortium that revolves around tissue engineered biocornea development and refractive surgery.

The training has been a unique learning experience that consolidated my training by expanding and embedding my skills on both a vertical and horizontal level. I am confident that this in-depth training has optimally prepared me for my future endeavours and take on the challenging task of becoming a teaching-minded and actively involved staff member in anterior segment pathology at a referral centre.

Conclusion *Summarise the overall training experience and the significance it holds for your career trajectory.*

I would like to express my gratitude to the Donders Binkhorst travel grant which has given me the opportunity to venture on this journey. This training and professional growth would not have been possible without the support of the Donders-Binkhorst travel grant, and other funding bodies, including the Rotary District 2640 grant and ESCRS fellowship grant. To my experience, the training in Montréal stands for high-end training, actively involved mentorship, and unique opportunities that were created in various forms. The training has been a once-in-a-lifetime educational opportunity to expand my training and cross- integrate my skills, knowledge and research over the various domains of the anterior segment. I experienced a steep learning curve while expanding my skills set, which now provides me with the necessary confidence and self-reflection to tackle complex cataract and anterior segment cases. The endorsement I experienced during the training , and the multiple occasions to expand my network, further propelled my learning experience, and guarantee a long-term collaboration between the hosting institutions and me.
Furthermore, I gained extremely valuable finetuning of various 'secondary' skills beyond the principal scope of the training , yet, that are essential in becoming a successful academic and clinician. These skills include (project) management, communication and leadership skills. I am confident that the training has optimally prepared me to take on my future position at the Eye Hospital Rotterdam, a 3rd/4th line referral centre, in which I will focus on complex cataract and anterior segment cases, training peers, and expanding my research in tissue engineered biocornea research and refractive surgery. I would once more like to thank the Rotary district 2140, ESCRS education committee and Donders-Binkhorst committee to have supported me with this opportunity.