

# ESOT Transplant Fellowship – Final detailed report

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## Summary of Clinical and Research Activities

As part of my clinical fellowship, I have strengthened my conviction that a deep understanding of the risks inherent to transplant procedures—and the ability to identify and manage these risks early—is fundamental to the success of any transplant program. Anticipating complications and providing comprehensive, continuous care across the entire transplant pathway are essential for ensuring optimal outcomes for transplant recipients.

During my fellowship in Leuven, I have had the invaluable opportunity to observe and actively contribute to the delivery of high-quality transplant care. This exposure has significantly enhanced my clinical skills and broadened my insight into the complexities of transplant medicine. Throughout this period, I have participated in a wide range of activities spanning the full transplant continuum, from pre-transplant assessment to long-term post-transplant follow-up.

- 1. Pre-transplant Selection Process:** A key component of my role has been participation in outpatient consultations and multidisciplinary team (MDT) discussions related to candidate evaluation and listing. Through these interactions, I developed a deeper understanding of the multifaceted decision-making processes that underpin appropriate candidate selection. I gained valuable insight into how careful patient selection directly influences post-transplant outcomes by ensuring that recipients most likely to benefit are prioritized.
- 2. Peri-transplant Care:** I have also been actively involved in MDT meetings with intensivists, transplant surgeons, and other specialists to discuss early post-transplant management. These discussions exposed me to the acute challenges faced by transplant recipients, including early graft dysfunction, rejection, infection prevention, and management of peri-operative complications. This experience refined my clinical approach to peri-transplant care and underscored the importance of coordinated, patient-centered collaboration among specialties.

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**3. Post-transplant Care:** The largest portion of my clinical work has focused on the follow-up and long-term care of transplant recipients in both inpatient and outpatient settings. I have been responsible for evaluating long-term outcomes, monitoring for complications, and adjusting management strategies to optimize graft function and patient wellbeing. Additionally, I participated in regular virtual case-based discussions with national and international colleagues, which enriched my perspective on the management of complex or challenging clinical scenarios.

**4. Pulmonary GvHD Care:** Beyond my involvement in solid-organ transplant care, I have also contributed to the management of patients with pulmonary graft-versus-host disease (GvHD), particularly in the context of their evaluation for lung transplantation. Managing pulmonary GvHD requires a nuanced, multidisciplinary approach due to its diagnostic and therapeutic complexities. Through outpatient follow-up of these patients, I gained extensive experience in assessing disease progression, optimizing medical therapy, and determining suitability for transplantation, further expanding my expertise in transplant-related pulmonary care.

**5. Biobanked Transbronchial Cryobiopsies – Translational Research:** On the translational research front, I have been actively involved in the handling and preparation of biobanked transbronchial cryobiopsy samples for an ongoing cross-validation study aimed at improving the understanding of transplant-related complications in lung transplant recipients. My responsibilities have included the careful selection of suitable samples, processing and cataloguing them according to standardized protocols, and preparing them for downstream analysis, as well as interpretation of pilot-data. By ensuring accurate sample management and maintaining high methodological standards, I contributed to the robustness of the study's dataset and supported the generation of reliable results. This work has deepened my appreciation for the translational aspects of transplant research and strengthened my practical skills in integrating clinical insight with laboratory-based investigation.

### **Scientific Output**

In addition to my clinical and translational activities, I am pleased to report substantial scientific progress achieved during my fellowship. My research contributions have focused on improving post-transplant outcomes, refining patient selection criteria, and advancing our understanding of the molecular and immunological mechanisms underlying graft dysfunction and rejection.

**A. Publications:** I have contributed to several ongoing research projects, including multiple publications, published manuscripts, and papers currently under review. These works address key

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challenges in lung transplantation, with emphasis on chronic lung allograft dysfunction (CLAD), graft rejection, donor-derived cell-free DNA, and complications affecting long-term graft survival.

1. **Zajacova A**, Dupont LJ, De Leyn P, Ceulemans LJ, Vos R; Leuven Lung Transplant Group. Characteristics and Outcomes of 1500 Lung Transplantations in the Leuven Lung Transplant Program: Turning Past Lessons Into Tomorrow's Foundations. *Transpl Int.* 2025 Nov 12;38:15495. doi: 10.3389/ti.2025.15495. PMID: 41312224; PMCID: PMC12648049.
2. **Zajacova A**, Alkhouri M, Guney M, Ferrao G, Rezac D, Vyskocilova K, Kotowski T, Dutkova A, Dvorackova E, Lischke R, Fila L, Havlin J. Exploring acute cellular rejection in lung transplantation: insights from donor-derived cell-free DNA analysis. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub.* 2025 May 16. doi: 10.5507/bp.2025.016. Epub ahead of print. PMID: 40391837.
3. **Zajacova A**, Alkhouri M, Ferrao G, Guney M, Rezac D, Vyskocilova K, Kotowski T, Dutkova A, Dvorackova E, Lischke R, Fila L, Ross DJ, Vanaudenaerde B, Havlin J. Early post-lung transplant cell-free DNA levels are associated with baseline lung allograft dysfunction. *Transpl Immunol.* 2025 Sep;92:102245. doi: 10.1016/j.trim.2025.102245. Epub 2025 May 31. PMID: 40456369.
4. Fila L, **Zajacova A**. Navigating the pitfalls of pulmonary function testing in chronic lung allograft dysfunction and chronic pulmonary graft-versus-host disease. *Eur J Intern Med.* 2025 Nov;141:106500. doi: 10.1016/j.ejim.2025.106500. Epub 2025 Sep 4. PMID: 40912970.
5. Beeckmans H & **Zajacova A**, Vos R. *Pseudomonas aeruginosa*-driven Humoral Immune Activation in Lung Transplantation: A Treatable Trait to Avert Chronic Lung Allograft Dysfunction? *Transplantation.* 2025 Nov 10. doi: 10.1097/TP.0000000000005566. Epub ahead of print. PMID: 41211870. (*shared first authorship*)
6. Beeckmans H, Pagliazzi A, Kerckhof P, Hofkens R, Debackere F, **Zajacova A**, Bos S, Vanaudenaerde BM, de Loor H, Naesens M, Vos R. Donor-derived cell-free DNA in chronic lung allograft dysfunction phenotypes: a pilot study. *Front Transplant.* 2024 Dec 23;3:1513101. doi: 10.3389/frtra.2024.1513101. PMID: 39764156; PMCID: PMC11701071.
7. **Zajacova A**, Revilla-Lopez E, Guney M, De Pelsmaeker S, Emonds MP, Naesens M, Saez-Gimenez B, Vanaudenaerde BM, Vos R: Pitfalls in Detection and Interpretation of Anti-HLA Antibodies and How to Move Forward in Lung Transplantation - *under review in European Respiratory Review*

8. Beeckmans H, Hooft C, Kerckhof P, Willems L, Aerts G, Jin X, Geudens V, Vermaut A, Zapata-Ortega M, Cortesi E, **Zajacova A**, Van Herck A, Lauriers S, Verbeylen L, Tielemans B, Feys S, Wauters J, Lagrou K, De Sadeleer L, Godinas L, Bos S, Dupont LJ, Cleynen I, Bohyn A, Ceulemans LJ, Vanaudenaerde BM, Vos R: Pentraxin 3 polymorphisms predispose to Aspergillus infection and rejection after lung transplantation - *under review in American Journal of Transplantation*
9. Beeckmans H, Kerckhof P, Geudens V, Vanluyten C, Zapata-Ortega M, Willems L, Van Herck A, Vermaut A, Aerts G, Hooft C, Jin X, Van Slambrouck J, **Zajacova A**, Mercurio M, Cortesi E, Mohamady Y, Tielemans B, Knoop C, Janssens WA, Gayan-Ramirez G, Wuyts WA, Godinas L, Bos S, Wauters E, Dupont LJ, Van Raemdonck D, Weynand B, Saez-Gimenez B, Schiller H, Schupp J, Kneidinger N, De Sadeleer L, Ahangari F, McDonough JE, Ceulemans LJ, Yildirim O, Kaminski N, Vanaudenaerde BM, Vos R: A Transcriptomic Atlas of Chronic Lung Allograft Dysfunction - *under review in European Respiratory Journal*

B. **Conference Presentations:** I presented following preliminary findings from my research to numerous scientific meetings (only first or last-authored presentations/posters listed):

1. 03/2025: Poster - 1500 Lung Transplantations in the Leuven Lung Transplant Program: A Retrospective Analysis (Belgian Transplantation Society Congress)
2. 04/2025: Poster - Survival After Combined Lung and Liver Transplantation: A 22-year Single-Centre Retrospective Study (ISHLT Congress)
3. 04/2025: Poster - BLAD in CLAD Matters: Diminished Time to CLAD and Post-CLAD Survival in Patients with Suboptimal FEV1 Baseline (ISHLT Congress)
4. 04/2025: Poster - Antithymocyte Globulin Treatment for Chronic Lung Allograft Dysfunction: A Single-Centre Retrospective Study (ISHLT Congress)
5. 06/2025: Poster - How Aggressive is Too Aggressive: Navigating Reflux and Rejection after Lung Transplantation (ESOT Congress - *senior author*)
6. 06/2025: Poster - Navigating the Crossroads of Immunosuppression and Infection: A Case of HEV Neuroinfection After Lung Transplantation (ESOT Congress - *senior author*)
7. 06/2025: Poster - 1500 Lung Transplantations in the Leuven Lung Transplant Program: A Retrospective Analysis (ESOT Congress)
8. 06/2025: Presentation - Three Decades of Retransplantation for Chronic Lung Allograft Dysfunction: A Retrospective Analysis (ESOT Congress)
9. 06/2025: Presentation - Transplant Fellowship Outcomes (ESOT Congress)

10. 09/2025: Poster - B-Cell Crossmatch Positivity Predicts Worse CLAD-Free Survival Post-Lung Transplant (ERS Congress)
  11. 10/2025: Presentation - Leuven Experience (Young Professionals in Transplantation Congress, Czech Society for Organ Transplantation)
  12. 10/2025: Presentation - Approaches to minimising HLA-associated risk in lung transplantation (Leuven Lung Transplant Symposium)
3. **Collaborative Research:** Beyond my direct research output, I have engaged in active collaborations with multiple national and international research groups. These collaborations have enriched my understanding of global trends in transplant immunology, molecular diagnostics, and chronic allograft dysfunction. Working with colleagues across Europe and abroad has expanded both my methodological skillset and my ability to conduct multidisciplinary, cross-institutional research.

### **Personal and Professional Development**

In addition to my clinical and research activities, this fellowship period has been marked by significant personal and professional growth. I successfully **completed my PhD** on the topic of donor-derived cell-free DNA in lung transplantation at the Second Faculty of Medicine, Charles University in Prague. The exceptional scientific quality and impact of my doctoral work were recognized with the **Dean's Prize for Extraordinary Results**, underscoring the relevance of my research to the field of transplant medicine.

Concurrently, I have been **finalizing MBA studies**, with my thesis — focused on the evolving role of the medical director in modern healthcare systems — scheduled for defense in January 2026. I received highly favorable evaluations from both appointed opponents, reflecting the academic and practical value of this work.

My scientific development was further supported by senior authorship of a last-authored abstract selected for the **Best of Lung Transplant Slide Deck at the ESOT Congress 2025**, a distinction that highlights the visibility and relevance of my research contributions.

In addition, I was selected for the 2025 **Editorial Fellowship** at Transplant International, the official journal of the European Society for Organ Transplantation, which provided valuable insight into academic publishing, peer review processes, and scientific editorial standards.

In recognition of my publication record, I was honored with two **prestigious distinctions from the Czech Pneumologic Society**, acknowledging both the international and national impact of my work

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as one of the Top Three Best International Publications Under 35 Years and Top Three Best National Publications Under 35 Years.

Finally, to further support my integration into clinical practice in Leuven and to strengthen communication within the multidisciplinary transplant team, I successfully achieved **B2 proficiency in Dutch**, representing an important step in my professional and personal development.

### Acknowledgment

I am deeply grateful to **ESOT** for providing me with this remarkable opportunity. The fellowship has not only strengthened my clinical and scientific expertise but has also enabled me to grow within an inspiring international community dedicated to advancing transplant medicine. The support and trust placed in me throughout this period have been instrumental in shaping my professional development, and I remain committed to carrying forward the values, knowledge, and collaborative spirit that this fellowship has fostered.

I would like to express my sincere gratitude to the entire **ESOT team**—especially Laura Contessi—for their exceptional support throughout the fellowship. Their guidance and assistance have been invaluable in navigating both the administrative and educational aspects of the programme.

I am equally grateful to the **Leuven Lung Transplant team** for welcoming me into their service and for creating an environment that fostered continuous learning and professional growth. My heartfelt thanks go to my mentor, **Prof. Robin Vos**, whose expertise and mentorship have profoundly shaped my clinical and research development; to **Prof. Bart Vanaudenaerde**, whose leadership and scientific insight have greatly enriched my research experience; and to **Prof. Laurens Ceulemans**, whose professional journey and longstanding commitment to transplantation—including his own ESOT Transplant fellowship in 2019—have been a source of genuine inspiration and motivation throughout my stay. Their collective support has been instrumental in making this fellowship an extraordinarily valuable and transformative experience.



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