



## HABILITATION A DIRIGER DES RECHERCHES

Date de la soutenance : **09 juin 2026**

Nom de famille et prénom de l'auteur : **Madame ROBBINS Hilary**

Titre des travaux : *Stratégies de dépistage et de détection précoce du cancer fondées sur l'évaluation des risques*

### Résumé



Detecting cancer early, at a stage when it can be definitively cured, is a powerful strategy to reduce mortality and morbidity from cancer at the population level. Cancer screening is the systematic process of looking for cancer among people who do not have symptoms. The benefits of cancer screening and early detection are stressed in the realm of public discourse, and many people might believe that only good can come from identifying cancer earlier. Of course, as population scientists, we know that an enormous degree of complexity lies beneath this apparently simple story.

My research uses cancer risk – i.e., a person's probability of developing cancer over a specified length of time – as a unifying quantity that can bring clarity and simplicity to complex questions about whether, where, when, and how to implement cancer screening strategies. This thesis has 5 main chapters. First, I describe the basic frameworks and concepts of risk-based cancer screening, including the approach of risk benchmarking, and key concepts of study design that underpin my research. Following are three core chapters addressing the main areas in which I have worked: lung cancer, HPV-driven cancers, and overarching challenges in cancer screening. I conclude with a section on perspectives and future directions.

It is an incredible time to be working in early cancer detection. Technological development is more rapid than ever, leading to a wealth of available risk calculators, biomarker tests, and other tools that we might use to assess whether an individual is likely to develop cancer. What I hope this research will illustrate is that simply developing these tools and technologies is not enough; rather, we must fully understand whether, when, and in whom they can bring genuine clinical benefit. This benefit must be carefully balanced with the inevitable harms if we are to achieve measurable and sustainable impacts on the population burden of cancer.