



MESI-STRAT

Systems Medicine of Metabolic-Signaling networks -
A New Concept for Breast Cancer Patient Stratification



Newsletter No. 9 – September 2023

After more than five years our project is coming to a successful end. We filled the five years with countless experiments, important clinical studies, numerous (online) meetings, significant modeling optimization, meticulous data analysis, interesting discussions with patients, and overall exciting results. We are proud to say that we have reached most of our goals despite a pandemic and other obstacles. We have found new ways for patient stratification and important insights in the development of resistance to endocrine therapy. We are excited to see which impact our results will have on breast cancer research and treatment will of course continue our efforts in the upcoming years.

In this last newsletter we would like to give a brief summary of our final meeting in Barcelona and introduce Leon Regin from the Charité in Berlin. He concludes our series of portraying the PhD students and PostDocs of MESI-STRAT. In addition, we present the results of our MESI-STRAT survey, a questionnaire which has been answered by more than 600 patients and members of the general public.

Final MESI-STRAT Consortium Meeting, Barcelona, Spain

For our final in person meeting during the project we were able to return to beautiful Barcelona. We would like to thank the team from VHIO, especially Violeta Serra for organizing another meeting perfectly.



Participants of the final MESI-STRAT meeting in Barcelona.

We were also really happy that again three of our Advisory Board Members managed to join us. Anne-Lise Borresen-Dale and Pernette Verschure both made the effort to travel to Barcelona and Hans Westerhoff joined online, thanks a lot to all of them.

During the meeting we focused on planning the completion of the remaining project tasks as well as on how we can continue our activities after the official end of the project. I think, I can speak for the whole consortium, when saying that we have all made not only important scientific discoveries but also valuable personal connections during this project.

MESI-STRAT survey

In 2019, we started collecting answers for a MESI-STRAT questionnaire and updated the questionnaire after the first interesting results in mid 2020 to gather more background of the respondents (e.g. education, support systems). Both questionnaires were available in German and English in versions addressing patients as well as the general public. They were distributed online as well as in hard copy by mailings to PATH patients, at the MUI hospital and at events (e.g. patient days, science nights). In total, we collected 665 answered questionnaires.

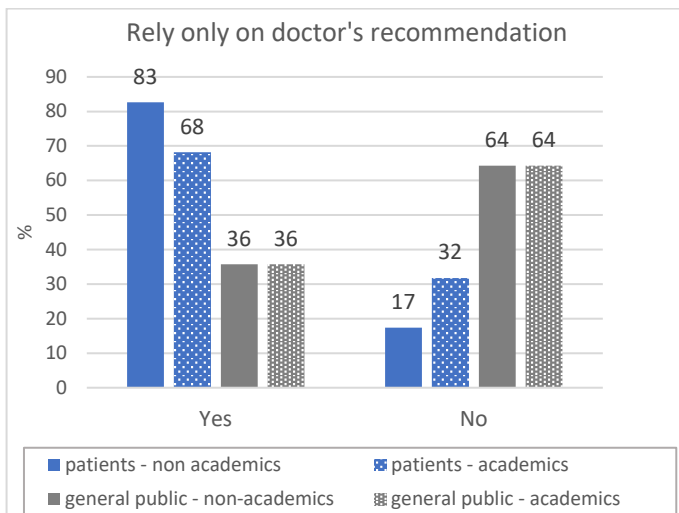
The most interesting result was that the majority of respondents (> 60 %) who had not had breast cancer (general public) say they would gather additional information to their doctor's recommendation and also about non-routine tests and treatments in case of a severe disease. Among breast cancer patients only 22 % indicated they actually sought additional information about their doc-



tor's recommendations and only about 50 % say they inquired about non-routine tests and treatments. Neither diverging education levels, nor support systems, nor country of residence can fully explain the difference.

We think this result can be interpreted divergently. Possibly, most European breast cancer patients feel very well taken care of by their hospitals and do not feel the need to consider other treatment or diagnosis options. Or patients especially at the stressful and overwhelming time of diagnosis are too insecure and hesitant to challenge the initial recommendations, and simply want the therapy to start quickly to be cured as soon as possible.

The figure below gives an example of the differences we see between patients and the general public.



Answers to the question if respondents relied (would rely) only on the recommendations of their doctor for their treatment plan, sorted by education.

Leon Regin

Charité, Universitätsmedizin Berlin

When I started my medical studies in 2017, I was surprised how different patients deal with a cancer diagnosis. Each patient had own strengths, fears and sorrow which became evident receiving the diagnosis and throughout therapy. And sometimes, on leaving the hospital, my mind would linger on certain patients.

This experience was an important reason to enter the lab of Prof. Christine Sers in 2019, where I was supposed to review mechanisms of endocrine therapy resistance in ER+ breast cancer that cause relapse even long time after finishing 5 years of endocrine treatment. However, after submitting my work, I was still overwhelmed by the complexity of the disease. There were so many ways how cancer cells can evade the treatment. And so many, that we seem to know since decades, but do not understand in detail.



Leon Regin

PhD student at Charité, Universitätsmedizin Berlin

I decided to start working as a MD/PhD-student in 2021 the MESI-STRAT consortium. In my project, I want to understand how oncogenes activating the MAPK pathway influence metabolism and endocrine resistance to find new biomarkers and treatment options for endocrine resistant breast cancer patients. While I am about to finish my medical studies soon, my curiosity has not come to an end. I want to go even further and combine my interest in the individual patient and my research. As a future oncologist it will be important to me to put all my personal and scientific effort into my patient work.

Thanks to MESI-STRAT I got to know many researchers that share similar interests, all over the European Union, of which some have become not only collaborators, but also dear friends.

Visit www.mesi-strat.eu to learn more about our consortium and follow us on twitter [@MesiStrat](https://twitter.com/MesiStrat) for the latest news of our project!

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