

Interview with Professor Jarle Rørvik

Background

Professor Jarle Rørvik was born in Ålesund in 1954. -At age 7 our family moved to Volda where I later attended the so-called “landsgymnas” (high school). The teachers were very well qualified and inspired us to continue with university studies. Traditionally, quite many continued with lector education in Oslo or went to Trondheim to become civil engineers, Jarle says.



Professors Jarle Rørvik (left) and Arvid Lundervold.

-So why did you start on medical education? -I think that I chose medicine for two reasons. First, I had a very positive experience as patient for six weeks at a hospital after I broke my femoral bone in a downhill ski accident. Secondly, several of my friends also decided to go to Bergen to study medicine in 1975, Jarle memorize.

-The first room I rented as student at Sletten was quite small and sparsely furnished. Fortunately, I had been used to load and unload clipfish during holidays when I was younger, so I did not mind sleeping at the floor. Later, I first moved to Fantoft, then finally to Alrek student apartments, quite near Haukeland University Hospital (HUH), Jarle adds.

-I met my wife Tove Dragesund at Finse where students from UiB celebrated the 17th of May in 1977. Tove took her education and later phd in psychomotoric physiotherapy and now works half privately and half as postdoc at MOF/UiB, Jarle tells. -We have three children together; Håvard (gastrosurgeon in Copenhagen), Eivind (finance analysis / Danske Bank, Oslo), Synne (medical student in Bergen) and our grandchild Thor and finally Troya (our hunting dog). I have all I need for safe old days at Key West, Jarle says.

Jarle Rørvik finished his PhD education in 1998 with the thesis entitled “*On staging of prostate cancer prior to radical treatment – With Emphasis on Imaging Modalities*”.

Professional career

Jarle had his internship in Florø and served his military service at Sætermoen as military doctor. He started his professional career at the Women's clinic (Kvinneklinikken) at HUH in 1984, thereafter continued at Department of Neurology, before he started his specialization in radiology at the Department of Radiology in 1985.

–So how did you end up as a scientist and Professor in radiology?

–First of all I have to mention that I became inspired by the strong scientific culture at Department of Neurology, managed by Professor Johan A. Aarli at that time. Then, I was encouraged by my previous study mates and current colleagues Ansgar Espeland and Karen Rosendahl to apply for a position at Department of Radiology. I became more and more interested in research on prostate cancer, inspired by my colleagues at the Department of Urology; Professor Per Åge Høisetser and Professor Svein Haukaas, who both became my supervisors, Jarle tells.

–Gradually, I got the professional responsibility for uro-radiology at Department of Radiology, where I developed courses and procedures, and also did research on prostate cancer together with the urologists. We developed tight bands between research and the clinical work. I enjoy very much the practical implementation of results from research into the clinic. Then I became head for Section of Radiology at MOF/UiB; first as Associated Professor and finally Professor in full position. I am still the leader of uroradiology as consultant (20%) at the Department of Radiology, Jarle says.

The Section of Radiology was later included in the Department of Surgical Sciences which later became a part of Department of Clinical Medicine (K1) at UiB, where there also are four other Professors of Radiology, Karen Rosendahl, Ansgar Espeland, Ingfrid Haldorsen and Martin Biermann as well as three Associate Professors Jostein Kråkenes, Stein Magnus Aukland and Nils Vetti.

Professor Jarle Rørvik also has other time consuming duties by being Vice Director for Education and Study Manager at K1, including 10 study sections. -I must admit that I spend a lot of time in different meetings to establish new study plans, common lecturing days and study harmonization with other study sites, Professor Rørvik tells. He is also involved in the scientific committee in the Norwegian Radiology Society, arranging courses for researchers into biomedical imaging techniques. At the same time Jarle is in charge for the *Bergen Abdominal Imaging Research Group*, co-chaired with Professor Ingfrid Haldorsen, and he is Board Chairman of MedViz.

Relations to MedViz

-So in addition to your position as Board Chairman, what are your research interests within MedViz research consortium?

-Initially, I was connected to the MedViz activities through early cooperation with Professor Arvid Lundervold at Department of Biomedicine and with Professor Antonella Zanna Munthe-Kaas at Department of Mathematics at UiB. It has been of utmost importance for me to implement image based research results to improve clinical practice. Besides having a dedicated interest in applied research I also have established contacts through MedViz into basic research, which is important in that you get to know all the imaging modalities and learn about their strengths and limitations. Some colleagues claimed e.g. for 15 years ago that CT would expire after the introduction and investments in advanced MR equipment, but they were proven wrong. It is today possible to apply both

modalities in combination. All the modalities have great potential, particularly in combinations, for both imaging morphological and physiological functions. This is also the reason why image based biomarkers may be developed and used more frequently within individualized therapy in the future, Jarle explains.

-Moreover, two of my special fields of interest are multiparametric MRI (mpMRI) to measure kidney function and characterize kidney cancer as well as mpMRI for the work-up of prostate cancer.

Related to this focus we have established the MedViz Lighthouse Project *Image-based quantitative assessment on abdominal organ function* (2014 – 2016), Professor Rørvik adds.

-What is the scientific content in this project?

-The primary goal in our project is to develop knowledge and competence to establish robust techniques for image acquisition and post-acquisition analysis for both morphologic and quantitative, non-invasive, and local (voxel-wise) assessment of abdominal organs, thus optimizing the use of the complex research infrastructure at the Department of Radiology, Haukeland University Hospital and at UiB to the best for the patients, Jarle tells. -We will achieve this primary goal by reaching four defined subgoals:

1. Establish a framework for optimizing robust acquisition techniques used by different modalities in abdominal organs
2. Development and implementation of robust processing and analysis methods for global and local quantitation of image-derived structural and functional measures in abdominal organs
3. Develop advanced visualization and analysis of multi-parametric and multimodal imaging
4. Establish a framework for optimizing and evaluation of clinical feasibility and validity

-Currently, two of our PhD students, Consultant Lars Reisæter at HUH and Lecturer Eli Bjøvd Eikefjord at Bergen University College (HiB) are working within this MedViz Lighthouse Project. Lars is looking into multiparametric MR in localised kidney cancer and Eli is focusing on optimizing acquisition, image analysis and post processing of image data from contrast enhanced MR of the kidney, Jarle explains. Furthermore, two postdoc students Erlend Hodneland and Are Losnegård are working in these projects with research related to image data analysis.

-I can see that your activities in this project as well as in other areas also include several international partners?

-Yes, we appreciate very much the cooperation with Dr. Steven Sourbron, Faculty of Health and Medicine at University of Leeds, England. Steven is a MR physicist and is working together with us on imaging and pharmacokinetic modeling of the kidney. He is leading an approach where we are applying for a COST Action "Functional MR imaging for renal parenchymal disease". Another central cooperative partner is Professor Ludvig Paul Muren at Aarhus University in Denmark, who is working on image-guided, adaptive, intensity-modulated and particle beam radiotherapy. Ludvig is looking into how to model radiotherapy for prostate cancer. We want to develop techniques and ways for multiparametric MR of prostate, also aiding in surgical planning and active monitoring of prostate cancer, Jarle says. -I also want to mention the international cooperation with the mathematicians Professor Jan Modersitzki from University of Lübeck and Dr. Frank Gerrit Zöllner from Heidelberg University, Mannheim, Germany, Jarle adds.

MedViz future

-In your position as the Board Chairman of MedViz, how do you foresee the future development of MedViz?

-First of all I would like to highlight that MedViz is a very important cross-disciplinary meeting place for researchers within medical imaging and visualization, functioning as an incubator for hatching new ideas and promoting cooperation along the axis from mathematics to medicine. Currently, Bergen forskningsstiftelse (BFS) has taken a very positive initiative to establish a medical imaging center at Haukeland University Hospital, in which I believe that MedViz will be merged, physically localized near the new advanced imaging equipment at HUH. This implies that the 'MedViz' brand should be conserved in the new center name. We should also ascertain that the already established ways of cooperation locally, nationally and internationally within MedViz, especially the annual MedViz Conference and the MedViz Seminar series, will be continued. Also the ongoing MedViz Lighthouse projects should be continued, however, adjusted according to the new BFS initiative. It is very important that we keep the already developed MedViz competence within the new center, including medicine, radiography, natural sciences and engineering competence. I would like to add that we need researchers in both project-financed and fixed positions. Furthermore, a scientific oriented manager is wanted in order to achieve science of high standard within image acquisition, post processing, analysis and visualization, Professor Jarle Rørvik concludes.