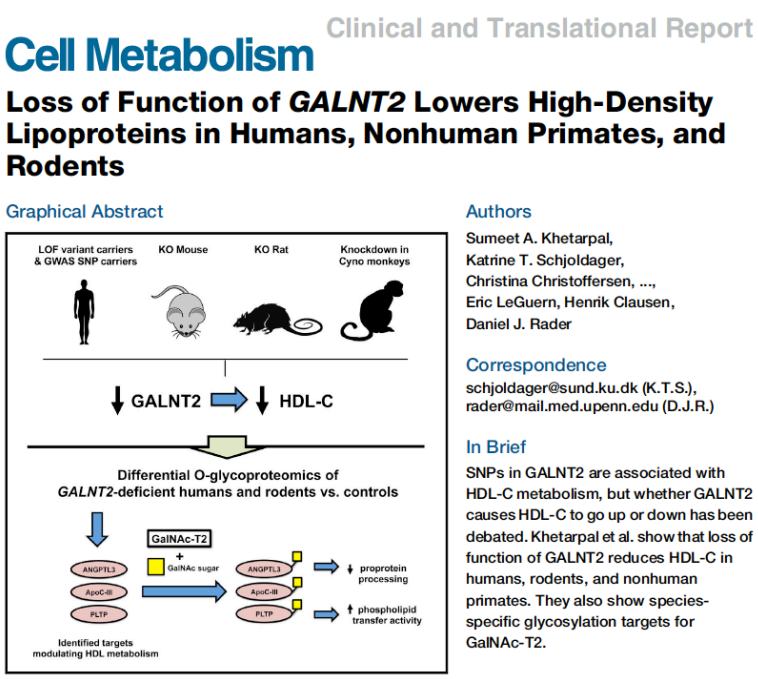
Highlights 2016

Copenhagen Center for Glycomics focuses on diseases caused by defects in the biosynthesis and structure of complex carbohydrates. Our unique approach is to use precise gene editing for dissection of glycosylation and discovery of biological functions. In 2016 we reached two major milestones that involved considerable and long-term efforts, which clearly warrant our unique approach and confirm our original hypotheses. 2016 was also a year of fundraising with the renewal application for the Danish National Research Foundation and funding applications to continue our fruitful glycoengineering of cell lines used for production of therapeutic biologics. While we were successful in both these objectives, we find that our number of published studies markedly fell in 2016, which we believe is partly due to time available and partly because our studies continue to increase in size and complexity, postponing final delivery of both high impact publications and PhD theses.

Our overriding hypothesis that glycogenes underlie common disorders was finally verified in a large collaborative study involving rodents, non-human primates and humans. We demonstrated that the *GALNT2* glycogene is important for high-density lipoprotein levels for the first time confirming the role of a candidate disease glycogene in a common predisposing disease condition (**Cell Metab)**. In another large long-term collaborative study we concluded a preclinical evaluation of a chimeric antigen receptor T-cell (CAR-T) built on our 5E5 antibody and demonstrated efficacy and safety in a humanized MUC1 transgenic mouse model (**Immunity**). We continued our studies of O-glycosylation of viral envelope proteins and reported global mapping of O-glycans on varicella zoster, cytomegalo, and Epstein-Barr viruses (**JBC**) Using our unique SimpleCell O-glycoproteomics strategies we provided the first O-Man glycoproteome of yeast (**MCP**).



We achieved a number of other major scientific breakthroughs in 2016, and some of these are already published now in 2017. There is excellent momentum in the program, and our achievements are slowly forming the basis a new quantum leap in glycomics with novel experimental and in-silico platforms as outlined in our half-term renewal application. We continue moving forward with translational activities in several directions. One patent application has been filed, and we established a spin-out at the University. In short the program continues to thrive and expand, and we are having increasing impact in the field and a leading international position.