

Progranulin and dementia—a blood sample does not tell the full story!

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Progranulin is a central protein in both neuronal survival and neurodegenerative diseases. It is thus not surprising that altered progranulin levels represent a universal theme shared across several common neurodegenerative diseases. In Alzheimer's Disease, for instance, reduced brain levels of progranulin contribute to the specific amyloid disease pathology, while increased levels appear to protect against this pathology. In genetic forms of another type of dementia, namely frontotemporal dementia (FTD), progranulin levels can be reduced. As progranulin can be measured relatively easily in blood, it seemed that a promising new biomarker for types of dementia has now been found. In fact, treatments were proposed to increase progranulin levels, aiming to yield a therapeutic effect for many neurodegenerative diseases. It was suggested to take progranulin in blood as a measure of response for these future treatments.

Carlo Wilke and Matthias Synofzik from the Hertie-Institute for Clinical Brain Research & German Center for Neurodegenerative Diseases (DZNE), Tübingen, Germany, have now shown that, unfortunately, the full story of progranulin is not that simple. The levels of progranulin in blood do not correlate with the levels of progranulin in the liquid surrounding the brain (cerebrospinal fluid) - neither in Alzheimer's Disease or in Frontotemporal Dementia, nor in Amyotrophic Lateral Sclerosis (ALS). But it is the brain where these neurodegenerative diseases actually take place. It seems that the progranulin levels around the brain are regulated by different mechanisms than the progranulin levels in the body periphery, e.g. in blood.

These findings shed new light on the understanding of the biological processes underlying neurodegeneration in Alzheimer's Disease and other common [neurodegenerative diseases](#). Moreover, they have important implications for clinical research and practice in these diseases: simply taking a blood sample for progranulin will not tell a lot about what happens to progranulin in the brain.

These results maybe disappointing, at first glance, for researchers and pharmaceutical companies aiming to discover biomarkers and treatment measures but they prevent from working on possibly misleading biomarker and treatment trials. Such trials indeed need to focus, not on blood progranulin, but on central nervous progranulin.

More information: Carlo Wilke et al, Serum Levels of Progranulin Do Not Reflect Cerebrospinal Fluid Levels in Neurodegenerative Disease, *Current Alzheimer Research* (2016). [DOI: 10.2174/1567205013666160314151247](#)

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