Title:    A brain imaging repository of normal subjects across the life course: Brain Images of Normal Subjects (BRAINS)

Topic:   Open Innovation using Data Analytics

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The Brain Images of Normal Subjects (BRAINS) Imagebank is an integrated repository project sponsored by the University of Edinburgh and the Scottish Imaging Network: A Platform for Scientific Excellence (SINAPSE) collaborators.

The purpose of BRAINS is to provide sharing and archiving of detailed normal human brain imaging and phenotypic data, to create better estimates of the range of normal brain size and integrity across the life-course.

The definition of 'normal' is not simple and therefore this Imagebank can be searched by a range of linked data, such as gestational age at birth, blood pressure, medications, other risk factors, and several MRI sequences, including T1, T2, T2*, FLAIR, and DTI.

The availability of clinically relevant MRI sequences from healthy volunteers across the life-course, linked with related phenotypical, demographic and cognitive measures, without diagnosed disease is an essential resource:

(i)        As a reference atlas, for interpretation of brain images in clinical diagnosis, such as having access to healthy subject reference images and linked data closely matched to a patient's scan, to improve diagnostic accuracy (Farrell, C. et al., 2009)

(ii)        For the biomedical research community to develop and test new methods, e.g. machine learning, to detect brain pathology and associated clinical manifestations, e.g.,

    Early markers of neurodevelopmental impairment or dementia.

    Precise estimates of disease risk.

    Developmental ranked atlases across the life-course (Dickie, D.A., et al., 2013).

BRAINS is a living Imagebank where new data will be added. Initially BRAINS will contain existing data from n=763 healthy volunteer subjects (0-81 years of age) from projects in 3 centres. A further n=2119 subjects (prenatal to 90 years) from 15 other projects in Scotland are currently being added.

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