Application number/Title: 24711 - On the quest for tissue-specific contributions to disease

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1) Centre Hospitalier Universitaire Vaudois

2) University of Oxford

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Keywords provided by the Applicant PI to describe the research project:

Tissue-specificity, phenotype-expression correlation, -omics

Application Lay Summary:

1a: The genetic contribution of a multitude of diseases has been at least partially identified. The mechanisms through which genetics play a role in them are not well understood. We want to know if there are subsets of genetic variation associated with phenotypes such as blood pressure and heart beat, that affect specific organs, such that each disease has a more localized start, instead of a systemic one; or if disease progression is dependent on which tissue disease-associated SNPs are affecting expression the most.

1b: Results obtained by this research could lead to better understanding of why patients with the same conditions (e.g. hypertension or ECG alterations) respond

differently to treatments and have a different disease progression. Ultimately could lead to organ-specific treatments.

1c: We intend to establish if SNPs that control expression of specific gene products show differences in each tissue available, and if these differences lead to different outcomes or disease progression. For example, if 20% of all SNPs associated with hypertension correlate with increased expression of gene products in blood but not in lung, and another 20% of the same set of SNPs correlates with increased expression in lung but not in blood, we would like to know if individuals with a higher amount of these SNPs experience hypertension differently (develop the disease earlier or later, need more or less medication).

1d: Full cohort.