

## Supplementary Data

**Table S1.** A table of phenotypes with the highest centrality measures in the UKBB DDN. Diseases marked in bold appear multiple times as the most central nodes based upon our different network measures.

<i>Phenotype</i>	<i>PheCode</i>	<i>Attribute</i>	<i>Value</i>
<b>Hypothyroidism NOS</b>	244.4	Degree	83
<b>Disorders of lipid metabolism</b>	272	Degree	79
<b>Type 2 diabetes</b>	250.2	Degree	79
Diabetes mellitus	250	Degree	77
<b>Hyperlipidemia</b>	272.1	Degree	76
<b>Celiac disease</b>	557.1	Weighted Degree	$1.27 \cdot 10^5$
Non-celiac intestinal malabsorption	557	Weighted Degree	$1.26 \cdot 10^5$
<b>Hypothyroidism NOS</b>	244.4	Weighted Degree	$7.48 \cdot 10^4$
<b>Hypothyroidism</b>	244	Weighted Degree	$7.39 \cdot 10^4$
<b>Type 1 diabetes</b>	250.1	Weighted Degree	$6.53 \cdot 10^4$
<b>Psoriasis</b>	696	Weighted Degree	$5.09 \cdot 10^4$
Psoriasis NOS	696.4	Weighted Degree	$5.11 \cdot 10^4$
Disorders of muscle, ligament, and fascia	728	Closeness Centrality	1.00
Fasciitis	728.7	Closeness Centrality	1.00
Other retinal disorders	362	Closeness Centrality	1.00
Skin cancer	172	Betweenness Centrality	$2.15 \cdot 10^3$
<b>Disorders of lipid metabolism</b>	272	Betweenness Centrality	$1.97 \cdot 10^3$
<b>Hyperlipidemia</b>	272.1	Betweenness Centrality	$1.97 \cdot 10^3$
Essential hypertension	401.1	Betweenness Centrality	$1.84 \cdot 10^3$
Hypertension	401	Betweenness Centrality	$1.19 \cdot 10^3$
Coronary atherosclerosis	411.4	Betweenness Centrality	$7.72 \cdot 10^2$
Intestinal malabsorption	557	Eigenvector Centrality	1.00
<b>Celiac disease</b>	557.1	Eigenvector Centrality	1.00
<b>Hypothyroidism NOS</b>	244.4	Eigenvector Centrality	0.98
<b>Hypothyroidism</b>	244	Eigenvector Centrality	0.98
<b>Type 1 diabetes</b>	250.1	Eigenvector Centrality	0.95

<b>Type 2 diabetes</b>	250.2	Eigenvector Centrality	0.93
Rheumatoid arthritis	714.1	Eigenvector Centrality	0.89
Other inflammatory polyarthropathies	714	Eigenvector Centrality	0.89
<b>Psoriasis</b>	696	Eigenvector Centrality	0.86