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Protein	Sex	Highschool	R2	Pvalue
C-C motif chemokine 25	Man	H1	0.04	*
C-X-C motif chemokine 6	Man	H1	0.08	**
Interleukin-10 receptor subunit beta	Man	H1	0.06	**
Interleukin-17A	Man	H1	0.12	*
Interleukin-6	Man	H1	0.05	*
Latency-associated peptide transforming growth factor beta-1	Man	H1	0.07	*
Osteoprotegerin	Man	H1	0.22	*
Tumor necrosis factor receptor superfamily member 9	Man	H1	0.11	*
Vascular endothelial growth factor A	Man	H1	0.09	*
C-X-C motif chemokine 9	Man	H2	0.26	*
Eotaxin	Man	H2	0.33	*
Interleukin-10	Man	H2	0.55	***
Interleukin-5	Man	H2	0.24	*
Oncostatin-M	Man	H2	0.26	**
Tumor necrosis factor ligand superfamily member 14	Man	H2	0.18	*
Artemin	Man	H3	0.12	**
C-X-C motif chemokine 11	Man	H3	0.09	*
C-X-C motif chemokine 6	Man	H3	0.09	*
Cystatin D	Man	H3	0.21	***
Interleukin-15 receptor subunit alpha	Man	H3	0.09	*
Interleukin-17A	Man	H3	0.14	*
Interleukin-5	Man	H3	0.16	*
Oncostatin-M	Man	H3	0.09	*
T cell surface glycoprotein CD6 isoform	Man	H3	0.08	*
C-C motif chemokine 23	Man	H4	0.08	*
CUB domain-containing protein 1	Man	H4	0.15	**
Eotaxin	Man	H4	0.12	**
Fibroblast growth factor 23	Man	H4	0.13	*
Fibroblast growth factor 5	Man	H4	0.14	**
Glial cell line-derived neurotrophic factor	Man	H4	0.16	**
Interleukin-22 receptor subunit alpha-1	Man	H4	0.21	**
Leukemia inhibitory factor receptor	Man	H4	0.27	***
Protein S100-A12	Man	H4	0.07	*
T-cell surface glycoprotein CD5	Man	H4	0.08	*
TNF-related activation-induced cytokine	Man	H4	0.15	*
CD40L receptor	Man	H5	0.29	**
CUB domain-containing protein 1	Man	H5	0.23	*
Fractalkine	Man	H5	0.48	**
Interleukin-10 receptor subunit alpha	Man	H5	0.34	*
Macrophage colony-stimulating factor 1	Man	H5	0.24	**
Matrix metalloproteinase-1	Man	H5	0.13	*
Tumor necrosis factor receptor superfamily member 9	Man	H5	0.4	*
C-C motif chemokine 28	Man	H6	0.69	*
CD40L receptor	Man	H6	0.72	*
CUB domain-containing protein 1	Man	H6	0.6	*
Fractalkine	Man	H6	0.41	*
Interleukin-8	Man	H6	0.57	*
C-C motif chemokine 25	Man	H7	0.12	**
C-C motif chemokine 28	Man	H7	0.11	*
Eukaryotic translation initiation factor 4E-binding protein 1	Man	H7	0.12	*
Fibroblast growth factor 23	Man	H7	0.04	*
Latency-associated peptide transforming growth factor beta-1	Man	H7	0.06	*
Leukemia inhibitory factor	Man	H7	0.06	*
Matrix metalloproteinase-10	Man	H7	0.06	*
SIR2-like protein 2	Man	H7	0.1	**
Thymic stromal lymphopoietin	Man	H7	0.05	*
TNF-related activation-induced cytokine	Man	H7	0.07	*
TNF-related apoptosis-inducing ligand	Man	H7	0.08	*
Caspase-8	Man	H8	0.09	*
Leukemia inhibitory factor receptor	Man	H8	0.1	*
Osteoprotegerin	Man	H8	0.07	*

Table 1: *Protein for men, which are similar to your male friend, stratify by highschool*

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Protein	Sex	Highschool	R2	Pvalue
Delta and Notch-like epidermal growth factor-related receptor	Woman	H1	0.15	*
Eukaryotic translation initiation factor 4E-binding protein 1	Woman	H1	0.09	*
Interleukin-24	Woman	H1	0.15	*
Oncostatin-M	Woman	H1	0.22	*
Caspase-8	Woman	H2	0.05	*
Glial cell line-derived neurotrophic factor	Woman	H2	0.1	*
Interleukin-1 alpha	Woman	H2	0.05	*
Interleukin-2	Woman	H2	0.06	*
Tumor necrosis factor receptor superfamily member 9	Woman	H2	0.15	*
C-C motif chemokine 28	Woman	H3	0.09	**
C-C motif chemokine 3	Woman	H3	0.07	*
C-X-C motif chemokine 5	Woman	H3	0.09	*
CD40L receptor	Woman	H3	0.07	**
Cystatin D	Woman	H3	0.05	*
Leukemia inhibitory factor receptor	Woman	H3	0.14	*
Natural killer cell receptor 2B4	Woman	H3	0.06	*
CUB domain-containing protein 1	Woman	H4	0.14	*
Delta and Notch-like epidermal growth factor-related receptor	Woman	H4	0.18	*
Interleukin-10 receptor subunit beta	Woman	H4	0.25	**
Interleukin-18 receptor 1	Woman	H4	0.17	*
Monocyte chemotactic protein 4	Woman	H4	0.15	*
Neurturin	Woman	H4	0.38	**
Programmed cell death 1 ligand 1	Woman	H4	0.32	***
Sulfotransferase 1A1	Woman	H4	0.22	**
Urokinase-type plasminogen activator	Woman	H4	0.28	**
C-X-C motif chemokine 1	Woman	H5	0.14	*
C-X-C motif chemokine 5	Woman	H5	0.31	**
C-X-C motif chemokine 9	Woman	H5	0.21	*
Interleukin-18	Woman	H5	0.12	*
Interleukin-22 receptor subunit alpha-1	Woman	H5	0.13	*
Interleukin-5	Woman	H5	0.18	*
Matrix metalloproteinase-1	Woman	H5	0.12	*
Programmed cell death 1 ligand 1	Woman	H5	0.16	*
STAM-binding protein	Woman	H5	0.14	*
Sulfotransferase 1A1	Woman	H5	0.12	*
T-cell surface glycoprotein CD5	Woman	H5	0.13	*
C-C motif chemokine 23	Woman	H6	0.95	***
Fms-related tyrosine kinase 3 ligand	Woman	H6	0.76	**
Interleukin-17A	Woman	H6	0.64	*
Interleukin-2 receptor subunit beta	Woman	H6	0.75	*
Interleukin-20 receptor subunit alpha	Woman	H6	0.73	*
Interleukin-6	Woman	H6	0.9	***
C-C motif chemokine 23	Woman	H7	0.09	*
Fibroblast growth factor 19	Woman	H7	0.09	**
Interleukin-18 receptor 1	Woman	H7	0.11	**
Natural killer cell receptor 2B4	Woman	H7	0.16	**
Osteoprotegerin	Woman	H7	0.08	*
T cell surface glycoprotein CD6 isoform	Woman	H7	0.12	**
Caspase-8	Woman	H8	0.47	**
TNF-related activation-induced cytokine	Woman	H8	0.13	*

Table 2: *Protein for women, which are similar to your male friend, stratify by highschool*

Protein	Men	Women
Adenosine Deaminase	1.12	1.03
Artemin	0.98	1.04
Axin-1	1.06	1.02
Brain-derived neurotrophic factor	1.06	1.14
Beta-nerve growth factor	1.29	0.91
Caspase-8	1.01	1.04
Eotaxin	0.94	1.04
C-C motif chemokine 19	1	0.96
C-C motif chemokine 20	1.09	0.97
C-C motif chemokine 23	1.06	1.1
C-C motif chemokine 25	1.04	1.02
C-C motif chemokine 28	0.76	0.84
C-C motif chemokine 3	1	0.96
C-C motif chemokine 4	0.98	1.02
Natural killer cell receptor 2B4	1.02	1
CD40L receptor	1.03	1.04
T-cell surface glycoprotein CD5	1.09	1.07
T cell surface glycoprotein CD6 isoform	1.04	0.97
CUB domain-containing protein 1	1.04	1.14
Macrophage colony-stimulating factor 1	1.01	1.13
Cystatin D	1.04	0.97
Fractalkine	1.12	1.03
C-X-C motif chemokine 1	1.07	1.08
C-X-C motif chemokine 10	1.05	0.97
C-X-C motif chemokine 11	1.05	1.02
C-X-C motif chemokine 5	1.01	1.09
C-X-C motif chemokine 6	0.95	1
C-X-C motif chemokine 9	1.11	1
Delta and Notch-like epidermal growth factor-related receptor	1.14	1.09
Eukaryotic translation initiation factor 4E-binding protein 1	1.21	1.03
Protein S100-A12	1.03	0.99
Fibroblast growth factor 19	1.08	1.06
Fibroblast growth factor 21	1.07	1.12
Fibroblast growth factor 23	1.08	1.06
Fibroblast growth factor 5	1.03	0.9
Fms-related tyrosine kinase 3 ligand	1.11	0.99
Glial cell line-derived neurotrophic factor	1.08	1.05
Hepatocyte growth factor	1.04	1
Interferon gamma	1.04	0.79
Interleukin-10	0.99	1.16
Interleukin-10 receptor subunit alpha	1.03	0.96
Interleukin-10 receptor subunit beta	1.1	1.06
Interleukin-12 subunit beta	1.08	1
Interleukin-13	1.04	1.11
Interleukin-15 receptor subunit alpha	1.02	1
Interleukin-17A	0.95	1
Interleukin-17C	1.06	1.04
Interleukin-18	0.97	1.05
Interleukin-18 receptor 1	0.94	1.08
Interleukin-1 alpha	1.09	1.12
Interleukin-2	1.09	0.97
Interleukin-20	1.22	0.98
Interleukin-20 receptor subunit alpha	1.01	0.98
Interleukin-22 receptor subunit alpha-1	1	0.92
Interleukin-24	0.98	1.03
Interleukin-2 receptor subunit beta	1.05	0.93
Interleukin-33	1.03	0.99
Interleukin-4	0.98	1.09
Interleukin-5	0.87	1.04
Interleukin-6	0.98	1.3
Interleukin-7	1.03	1
Interleukin-8	1.05	1.01
Leukemia inhibitory factor	0.92	0.85
Leukemia inhibitory factor receptor	1.08	0.96
Monocyte chemotactic protein 1	1.05	1.18
Monocyte chemotactic protein 2	0.92	1.06
Monocyte chemotactic protein 3	1.01	0.92
Monocyte chemotactic protein 4	1	1.12
Matrix metalloproteinase-1	1.05	0.97
Matrix metalloproteinase-10	1.11	1.1
Neurturin	0.91	1.06
Neurotrophin-3	0.98	1.02
Osteoprotegerin	1.07	0.98
Oncostatin-M	1.09	1.03
Programmed cell death 1 ligand 1	0.93	0.96
Stem cell factor	1.05	1.08
SIR2-like protein 2	1.04	1.02
Signaling lymphocytic activation molecule	1.02	0.88
Sulfotransferase 1A1	1.01	1.07
STAM-binding protein	1.1	0.99
Transforming growth factor alpha	1.09	1.02
Latency-associated peptide transforming growth factor beta-1	1.08	0.99
Tumor necrosis factor	0.87	0.69
TNF-beta	1.04	1.02
Tumor necrosis factor receptor superfamily member 9	1.24	1.08
Tumor necrosis factor ligand superfamily member 14	1.08	1.01
TNF-related apoptosis-inducing ligand	1.17	1.01
TNF-related activation-induced cytokine	1.1	1.11
Thymic stromal lymphopoietin	1.01	0.98
Tumor necrosis factor	1.02	1.02
Urokinase-type plasminogen activator	1.24	1.08
Vascular endothelial growth factor A	1	1.16

Table 3: *Ratio of square distances between each person friend and each person non-friends, stratify by sex. Values greater than 1 indicate that friends have a smaller difference in biomarkers levels compared with their non-friends counterpart.*

Network	Total Relationships	Equal Relationships	MIN	Q1	Median	Average	Q3	MAX	SD	p-value
Overall	3767	2043	1691	1846	1890.5	1892.661	1936	2140	69.7	*
Physical	2823	1584	1240	1379	1417	1417.441	1458	1590	57.13	**
School	2979	1590	1318	1459	1497	1497.958	1538	1666	56.23	ns
Sports	598	415	233	288	301	301.938	316	371	20.78	****
Home	1247	722	530	605	627	626.908	648	738	31	**
Other	1095	612	450	531	551	550.655	570	648	28.63	*

Table 4: *Simulated networks (n=1000) same-to-same relationships againts the real network same-to-same relationships. All simulated network shows bias of BMI spread in the real network.*

Network	Total Relationships	Equal Relationships	MIN	Q1	Median	Average	Q3	MAX	SD	p-value
Overall	3767	2043	1691	1846	1890.5	1892.661	1936	2140	69.7	0.016
Physical	2823	1584	1240	1379	1417	1417.441	1458	1590	57.13	0.002
School	2979	1590	1318	1459	1497	1497.958	1538	1666	56.23	0.051
Sports	598	415	233	288	301	301.938	316	371	20.78	0
Home	1247	722	530	605	627	626.908	648	738	31	0.001
Other	1095	612	450	531	551	550.655	570	648	28.63	0.016

Table 5: *Simulated networks (n=1000) same-to-same relationships againts the real network same-to-same relationships. All simulated network shows bias of BMI spread in the real network.*

3 Change History

0.1

Divided the document in two, main and supplementary materials.

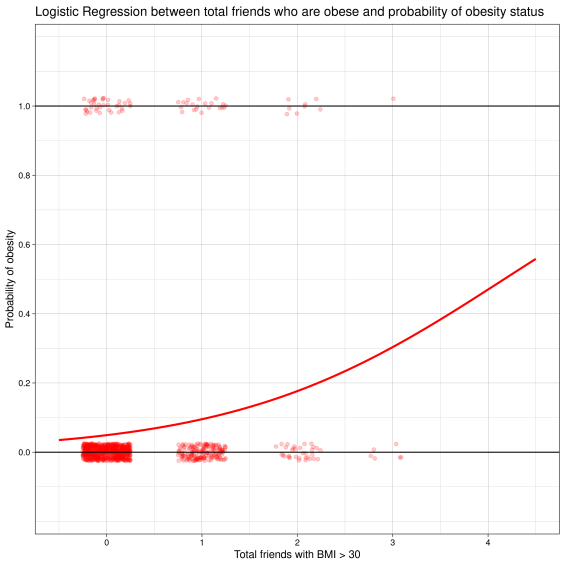

Figure 1: *Logistic regression between number of obese friends and obesity status. Each dot represent a person who can be obese (1) or non-obese (0), and who has a total number of obese friends (x-axis).*