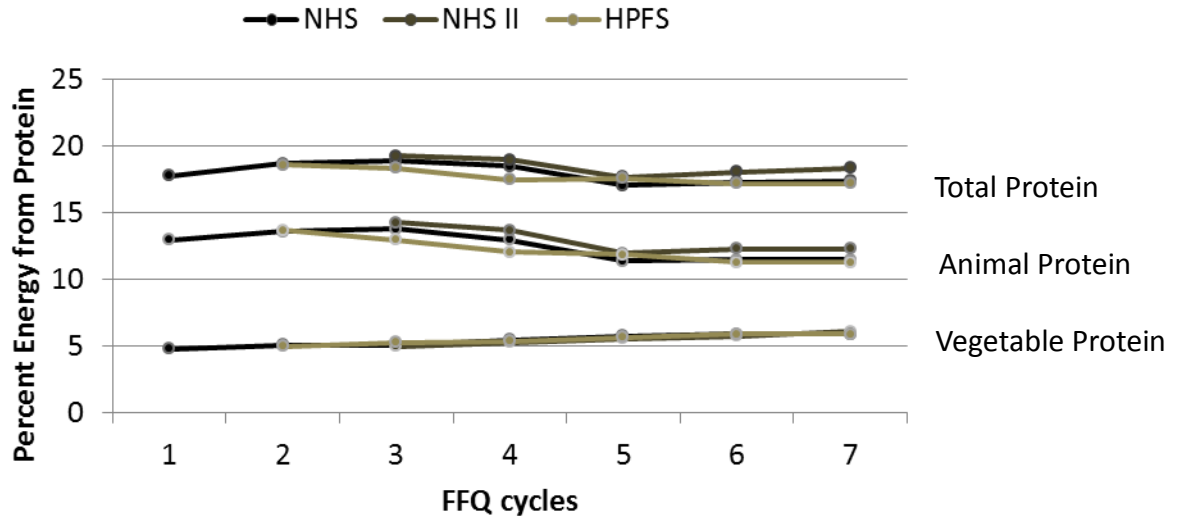**Web Figure 1.** Mean percentage of energy from total, animal and vegetable protein across 4-yr FFQ cycles in the Nurses' Health Study (1984–2006), Nurses' Health Study II (1991–2007), and the Health Professionals Follow-up Study (1986–2006)

Web Table 1. Major food sources of animal and vegetable protein

Animal Protein Sources	Vegetable Protein Sources
Red meat	Whole grains
Poultry	Nuts and nut butters
Processed meat	Seeds
Fish and seafood	Beans and peas
Eggs	Tofu and soy products
Dairy products	Leafy greens

Based on: Agricultural Research Service, US Department of Agriculture. *USDA National Nutrient Database for Standard Reference, Release 27*. Washington, DC: US Department of Agriculture; 2014.

Web Table 2. Age-adjusted characteristics according to baseline animal protein intake among 72,992 women in the Nurses' Health Study, 92,088 women in Nurses' Health Study II, and 40,722 men in the Health Professionals Follow-up Study

	NHS (1984)			NHS II (1991)			HPFS (1986)		
	Q1	Q3	Q5	Q1	Q3	Q5	Q1	Q3	Q5
Median intake (% energy/d)	9.7	12.9	16.8	9.9	13.5	17.6	9.4	12.8	17.0
No.	14597	14598	14599	18417	18418	18417	7920	7921	7921
Age (y)	50.3	50.0	50.6	36.1	36.0	36.2	52.9	52.9	53.0
White race/ethnicity (%)	97.5	98.1	97.6	95.8	96.8	96.0	94.4	95.8	94.4
BMI (weight (kg)/height (m)^2)	24.2	24.9	25.8	23.6	24.5	25.6	24.9	25.5	26.0
BMI >25 (%)	30.4	36.5	45.0	25.8	33.3	42.2	44.6	53.3	60.1
Physical activity (MET-hr/wk)	13.6	14.0	15.2	22.3	19.9	21.3	22.9	21.2	20.3
Current smoker (%)	26.4	23.6	23.9	12.9	11.5	12.4	10.0	9.7	9.6
Hypertension (%)	7.7	7.6	8.8	5.4	5.9	7.3	17.5	18.7	21.4
High cholesterol (%)	3.4	3.4	3.8	13.6	14.3	16.0	9.8	10.0	11.2
Family history of diabetes (%)	27.2	28.0	30.9	32.0	34.4	36.2	17.1	18.6	19.4
PMH use (%)	23.5	24.8	26.2	4.3	4.4	4.8	-	-	-
OC use (%)	-	-	-	11.8	10.5	10.3	-	-	-
Multivitamin use (%)	35.2	36.7	40.0	44.2	43.7	43.8	42.2	41.4	42.8
Alcohol (g)	8.5	7.3	4.9	3.8	3.2	2.3	14.6	11.6	7.7
Total energy (kcal)	1859	1781	1562	1870	1823	1631	2046	1991	1786
Carbohydrate (% energy)	52.3	46.4	40.8	56.5	49.5	43.8	52.6	46.8	41.4
Total fat (% energy)	32.7	34.9	35.8	29.7	32.0	32.3	30.0	32.4	33.5
Saturated fat (% energy)	11.4	12.6	13.2	10.3	11.4	11.7	9.9	11.2	11.7
Monounsaturated fat (% energy)	11.9	12.8	13.1	11.4	12.2	12.0	11.6	12.4	12.6
Polyunsaturated fat (% energy)	6.9	6.6	6.3	5.6	5.7	5.6	6.1	5.9	5.9
Trans- fat (% energy)	2.0	2.0	1.7	1.7	1.7	1.5	1.3	1.3	1.2
Dietary cholesterol (mg)	221.1	283.0	361.2	179.5	242.6	302.5	219.3	302.3	387.3
Glycemic load	114.0	99.2	84.2	140.5	120.6	104.2	141.2	124.2	107.3
Glycemic index	54.8	53.5	51.2	55.1	54.0	52.3	54.0	53.4	51.9
Total dietary fiber (g)	16.9	16.4	15.8	19.6	18.1	17.4	22.6	20.7	19.4
Cereal fiber (g)	4.6	4.2	3.6	6.4	5.6	4.9	6.6	5.9	5.1
Magnesium (mg)	269.6	286.7	313.8	305.0	311.8	333.9	351.9	347.6	361.8
(*Table continues*)									

Heme iron (mg)	0.71	1.1	1.5	0.70	1.1	1.6	0.85	1.3	1.8
Potassium (mg)	2661	2902	3152	2754	2927	3129	3240	3397	3614
Calcium (mg)	754.6	873.7	1027	887.7	1015.5	1151.0	803.6	897.1	995.0
Vitamin C (mg)	325.3	325.5	368.7	287.4	246.0	257.8	433.0	413.8	457.0
Vitamin E (mg)	80.7	83.2	98.4	51.5	42.1	45.6	94.9	88.2	108.0
Whole grains (serving/d)	1.3	1.2	1.0	1.6	1.4	1.1	1.9	1.6	1.3
Fruit (serving/d)	1.5	1.4	1.4	1.3	1.2	1.1	2.6	2.3	2.0
Vegetables (serving/d	2.7	2.9	3.0	3.3	3.3	3.4	3.0	3.0	3.0
Red meat (serving/d)	0.56	0.88	0.99	0.49	0.77	0.81	0.53	0.82	0.89
Processed meat (serving/d)	0.32	0.33	0.25	0.22	0.25	0.19	0.34	0.38	0.31
Fish (serving/d)	0.10	0.16	0.27	0.19	0.27	0.40	0.26	0.39	0.61
Chicken (serving/d)	0.20	0.29	0.45	0.39	0.67	1.0	0.34	0.55	0.85
Egg (serving/d)	0.29	0.36	0.40	0.16	0.19	0.18	0.26	0.34	0.37
Dairy (serving/d)	1.6	2.0	2.2	2.1	2.5	2.5	1.6	2.0	2.0
Legumes (serving/d)	0.39	0.40	0.39	0.40	0.38	0.35	0.44	0.42	0.40
Nuts (serving/d)	0.42	0.31	0.20	0.33	0.25	0.16	0.66	0.44	0.29
Peanuts (serving/d)	0.17	0.11	0.07	0.05	0.04	0.02	0.23	0.15	0.09
Peanut butter (serving/d)	0.26	0.20	0.13	0.24	0.19	0.12	0.31	0.21	0.13
Potatoes (serving/d)	0.43	0.41	0.30	0.38	0.39	0.32	0.42	0.43	0.35
Coffee (serving/d)	1.8	1.8	1.7	1.5	1.6	1.5	1.9	2.0	1.9
SSB (serving/d)	0.58	0.26	0.11	0.89	0.42	0.18	0.55	0.32	0.18

Values are means unless otherwise specified.

[a] Not adjusted for age.

OC, oral contraceptive; MET-hr/wk, metabolic equivalent-hours per week; PMH, postmenopausal hormone; SSB, sugar-sweetened beverages.

Web Table 3. Age-adjusted characteristics according to baseline vegetable protein intake among 72,992 women in the NHS, 92,088 women in NHS II, and 40,722 men in the HPFS

	NHS (1984)			NHS II (1991)			HPFS (1986)		
	Q1	Q3	Q5	Q1	Q3	Q5	Q1	Q3	Q5
Median intake (% energy/d)	3.9	5.0	6.1	4.0	5.1	6.6	3.9	5.1	6.6
No.	14598	14597	14599	18417	18416	18418	7921	7926	7921
Age (y) [a]	49.7	50.0	51.2	35.5	36.1	36.6	52.9	53.0	53.0
White race/ethnicity (%)	97.6	98.1	97.3	95.1	97.0	96.2	95.8	95.3	94.0
BMI (weight (kg)/height (m)^2)	25.0	25.0	24.5	25.2	24.7	23.7	25.9	25.5	24.8
BMI >25 (%)	37.6	38.4	34.3	38.2	34.8	27.5	58.8	54.4	42.1
Physical activity (MET-hr/wk)	12.2	14.0	17.0	17.4	20.0	26.8	17.4	20.9	26.8
Current smoker (%)	34.1	22.6	17.5	17.8	11.2	8.9	16.4	8.4	5.1
Hypertension (%)	8.9	8.1	7.5	7.5	5.6	5.3	21.1	18.7	18.1
High cholesterol (%)	2.8	3.0	4.4	15.2	14.3	14.2	8.4	9.8	12.6
Family history of diabetes (%)	27.7	28.5	28.6	35.1	35.0	33.0	17.7	19.5	18.1
PMH use (%)	23.1	24.2	25.6	5.1	4.1	4.4	-	-	-
OC use (%)	-	-	-	11.2	11.0	10.1	-	-	-
Multivitamin use (%)	34.6	36.0	42.2	40.9	43.6	47.3	37.6	40.6	48.4
Alcohol (g)	11.1	6.4	4.3	3.6	3.1	2.7	16.8	10.7	7.2
Total energy (kcal)	1743	1770	1694	1801	1807	1732	1988	1970	1897
Carbohydrate (% energy)	42.3	46.5	50.6	47.1	49.0	54.3	41.6	46.8	52.5
Total fat (% energy)	36.1	34.9	32.4	33.4	32,1	28.3	34.5	32.5	28.9
Saturated fat (% energy)	13.7	12.8	11.7	12.4	11.4	9.5	12.7	11.2	8.9
Monounsaturated fat (% energy)	13.3	12.8	11.7	12.7	12.2	10.7	13.1	12.4	11.0
Polyunsaturated fat (% energy)	6.2	6.7	6.9	5.4	5.7	5.7	5.5	6.0	6.3
Trans fat (% energy)	2.0	2.0	1.7	1.8	1.7	1.4	1.4	1.3	0.99
Dietary cholesterol (mg)	314.4	287.9	247.9	270.0	247.5	202.5	356.8	306.9	242.2
Glycemic load	88.7	99.5	108.9	114.9	119.2	133.1	108.8	124.0	139.8
Glycemic index	52.5	53.5	53.6	53.7	53.8	54.0	52.5	53.3	53.4
Total dietary fiber (g)	12.0	16.2	21.0	13.2	18.0	24.2	14.5	20.4	28.2
Cereal fiber (g)	2.6	4.1	5.8	3.5	5.5	8.0	3.6	5.8	8.5
Magnesium (mg)	256.8	281.0	336.2	273.1	311.7	368.0	301.1	343.7	423.0

(*Table continues*)

Heme iron (mg)	1.3	1.1	0.89	1.3	1.2	0.90	1.6	1.4	1.0
Potassium (mg)	2713	2888	3106	2686	2939	3170	3111.7	3392.5	3764.3
Calcium (mg)	864.6	865.0	940.2	1020	1011	1037	895.6	874.9	955.6
Vitamin C (mg)	294.8	316.1	421.4	214.4	240.0	328.4	339.6	410.4	564.1
Vitamin E (mg)	75.3	77.5	112.9	37.1	40.1	59.8	74.0	87.9	132.0
Whole grains (serving/d)	0.59	1.1	2.0	0.72	1.3	2.1	0.83	1.5	2.6
Fruit (serving/d)	1.1	1.4	1.7	0.90	1.2	1.5	1.7	2.3	2.8
Vegetables (serving/d	2.2	2.8	3.6	2.3	3.2	4.4	2.2	3.0	3.9
Red meat (serving/d)	1.0	0.85	0.58	0.93	0.74	0.43	1.1	0.79	0.43
Processed meat (serving/d)	0.37	0.32	0.21	0.30	0.24	0.13	0.51	0.37	0.18
Fish (serving/d)	0.16	0.17	0.18	0.25	0.29	0.31	0.34	0.41	0.48
Chicken (serving/d)	0.31	0.31	0.31	0.70	0.71	0.62	0.56	0.58	0.55
Egg (serving/d)	0.38	0.36	0.30	0.20	0.20	0.15	0.43	0.34	0.23
Dairy (serving/d)	2.3	2.0	1.6	2.9	2.5	1.9	2.4	1.9	1.5
Legumes (serving/d)	0.29	0.39	0.53	0.25	0.35	0.56	0.29	0.40	0.61
Nuts (serving/d)	0.14	0.27	0.57	0.14	0.24	0.38	0.22	0.41	0.82
Peanuts (serving/d)	0.05	0.10	0.23	0.02	0.04	0.05	0.07	0.13	0.29
Peanut butter (serving/d)	0.09	0.17	0.35	0.10	0.18	0.28	0.10	0.20	0.39
Potatoes (serving/d)	0.35	0.40	0.38	0.36	0.38	0.34	0.40	0.42	0.39
Coffee (serving/d)	2.0	1.8	1.51.3	1.4	1.6	1.7	2.0	2.0	1.7
SSB (serving/d)	0.60	0.27	0.14	1.0	0.36	0.17	0.61	0.30	0.15

Values are means unless otherwise specified.

[a] Not adjusted for age.

OC, oral contraceptive; MET-hr/wk, metabolic equivalent-hours per week; PMH, postmenopausal hormone; SSB, sugar-sweetened beverages.

Web Table 4. Hazard ratios (HR) and 95% confidence intervals (95% CI) for the association between total protein intake and risk of type 2 diabetes in the Nurses' Health Study, Nurses' Health Study II, and the Health Professionals Follow-up Study, adjusting for red and processed meat, heme iron, and branched chain and aromatic amino acids

	Q1	Q2	Q3	Q4	Q5	*P*-Trend
NHS						
+ red and processed meat	1.00	1.02 (0.94, 1.11)	1.13 (1.04, 1.22)	1.24 (1.14, 1.34)	1.33 (1.22, 1.46)	<0.001
+ BMI	1.00	0.98 (0.90, 1.06)	1.03 (0.95, 1.12)	1.06 (0.98, 1.16)	1.03 (0.94, 1.13)	0.28
+ heme iron	1.00	0.99 (0.92, 1.08)	1.07 (0.99, 1.17)	1.16 (1.06, 1.27)	1.22 (1.10, 1.35)	<0.001
+ BMI	1.00	0.96 (0.88, 1.04)	0.99 (0.91, 1.08)	1.01 (0.92, 1.10)	0.95 (0.86, 1.05)	0.56
+ BCAA	1.00	1.03 (0.91, 1.16)	1.18 (1.02, 1.37)	1.27 (1.06, 1.51)	1.28 (1.04, 1.58)	0.03
+ BMI	1.00	0.98 (0.87, 1.11)	1.08 (0.93, 1.26)	1.10 (0.92, 1.32)	1.02 (0.83, 1.25)	0.88
+ AAA	1.00	1.01 (0.90, 1.14)	1.13 (0.98, 1.31)	1.21 (1.02, 1.43)	1.26 (1.03, 1.53)	0.03
+ BMI	1.00	0.96 (0.86, 1.09)	1.04 (0.90, 1.20)	1.05 (0.88, 1.24)	0.99 (0.81, 1.21)	0.82
NHS II						
+ red and processed meat	1.00	0.97 (0.87, 1.07)	1.03 (0.93, 1.15)	1.13 (1.02, 1.26)	1.36 (1.22, 1.53)	<0.001
+ BMI	1.00	0.91 (0.83, 1.01)	0.90 (0.81, 1.00)	0.94 (0.85, 1.05)	1.00 (0.89, 1.12)	0.52
+ heme iron	1.00	0.91 (0.82, 1.00)	0.93 (0.84, 1.04)	0.99 (0.89, 1.11)	1.15 (1.02, 1.31)	0.002
+ BMI	1.00	0.89 (0.80, 0.98)	0.86 (0.77, 0.96)	0.89 (0.79, 1.00)	0.93 (0.82, 1.06)	0.63
+ BCAA	1.00	0.99 (0.85, 1.16)	1.02 (0.84, 1.24)	1.06 (0.84, 1.33)	1.27 (1.19, 1.36)	0.02
+ BMI	1.00	0.95 (0.81, 1.10)	0.89 (0.74, 1.08)	0.89 (0.71, 1.12)	0.97 (0.75, 1.26)	0.85
+ AAA	1.00	1.03 (0.88, 1.19)	1.00 (0.82, 1.21)	1.02 (0.81, 1.27)	1.18 (9.92, 1.53)	0.08
+ BMI	1.00	1.01 (0.87, 1.17)	0.94 (0.78, 1.13)	0.96 (0.77, 1.19)	1.05 (0.81, 1.36)	0.47
HPFS						
+ red and processed meat	1.00	0.86 (0.77, 0.97)	0.92 (0.81, 1.03)	0.98 (0.87, 1.11)	1.29 (1.13, 1.47)	<0.001
+ BMI	1.00	0.84 (0.74, 0.94)	0.87 (0.77, 0.98)	0.90 (0.80, 1.02)	1.13 (1.00, 1.29)	0.004
+ heme iron	1.00	0.83 (0.73, 0.93)	0.85 (0.75, 0.96)	0.89 (0.78, 1.02)	1.14 (0.98, 1.31)	0.01
+ BMI	1.00	0.81 (0.72, 0.91)	0.83 (0.73, 0.94)	0.85 (0.74, 0.97)	1.05 (0.91, 1.21)	0.13
+ BCAA	1.00	0.80, 0.67, 0.96)	0.81 (0.65, 1.01)	0.84 (0.64, 1.09)	1.06 (0.78, 1.45)	0.18
+ BMI	1.00	0.77 (0.65, 0.92)	0.76 (0.61, 0.95)	0.74 (0.57, 0.98)	0.91 (0.67, 1.24)	0.74
+ AAA	1.00	0.87 (0.73, 1.03)	0.95 (0.76, 1.18)	1.04 (0.80, 1.34)	1.40 (1.03, 1.89)	0.002
+ BMI	1.00	0.84 (0.70, 1.00)	0.90 (0.72, 1.12)	0.94 (0.73, 1.22)	1.23 (0.91, 1.67)	0.03
(*Table continues*)						

Pooled results						
+ red and processed meat	1.00	0.97 (0.92, 1.02)	1.05 (0.99, 1.11)	1.14 (1.08, 1.21)	1.33 (1.25, 1.41)	<0.001
+ BMI	1.00	0.92 (0.87, 0.98)	0.95 (0.90, 1.01)	0.99 (0.93, 1.05)	1.04 (0.98, 1.11)	0.01
+ heme iron	1.00	0.93 (0.88, 0.98)	0.98 (0.92, 1.04)	1.04 (0.98, 1.11)	1.18 (1.10, 1.26)	<0.001
+ BMI	1.00	0.90 (0.85, 0.95)	0.91 (0.86, 0.970	0.93 (0.88, 0.99)	0.97 (0.90, 1.04)	0.95
+ BCAA	1.00	0.96 (0.89, 1.05)	1.04 (0.94, 1.16)	1.10 (0.97, 1.24)	1.23 (1.06, 1.42)	0.001
+ BMI	1.00	0.92 (0.85, 1.00)	0.95 (0.85, 1.05)	0.95 (0.84, 1.07)	0.98 (0.85, 1.13)	0.87
+ AAA	1.00	0.98 (0.90, 1.06)	1.05 (0.95, 1.16)	1.11 (0.98, 1.25)	1.26 (1.10, 1.45)	<0.001
+ BMI	1.00	0.95 (0.87, 1.03)	0.98 (0.88, 1.08)	1.00 (0.88, 1.12)	1.06 (0.92, 1.22)	0.19

Adjusted for family history of diabetes, smoking, alcohol intake, physical activity, ethnicity, total energy intake, postmenopausal hormone use (NHS, NHS II), oral contraceptive use (NHS II), percentage of energy from *trans*- fat, saturated fat, monounsaturated fat, polyunsaturated fat, dietary cholesterol, dietary fiber, and glycemic index.

BMI, body mass index; BCAA, branched chain amino acids; AAA, aromatic amino acids.

Web Figure 2.   Pooled hazard ratios (HR) and 95% confidence intervals (95% CI) for the association between replacement of 1 serving of individual animal protein foods (dairy, poultry, egg, red meat, processed meat), refined grains, and potatoes with 1 serving of peanuts and peanut butter (A) and 1 serving of whole grains (B) in the NHS, NHS II, and HPFS. Models adjusted for age, family history of diabetes, smoking, alcohol intake, physical activity, ethnicity, total energy intake, postmenopausal hormone use (NHS, NHS II), oral contraceptive use (NHS II), intakes of sugar-sweetened beverages, fruit, vegetables, and BMI. Results were mutually adjusted for other food sources of animal protein, refined grains, and potatoes.
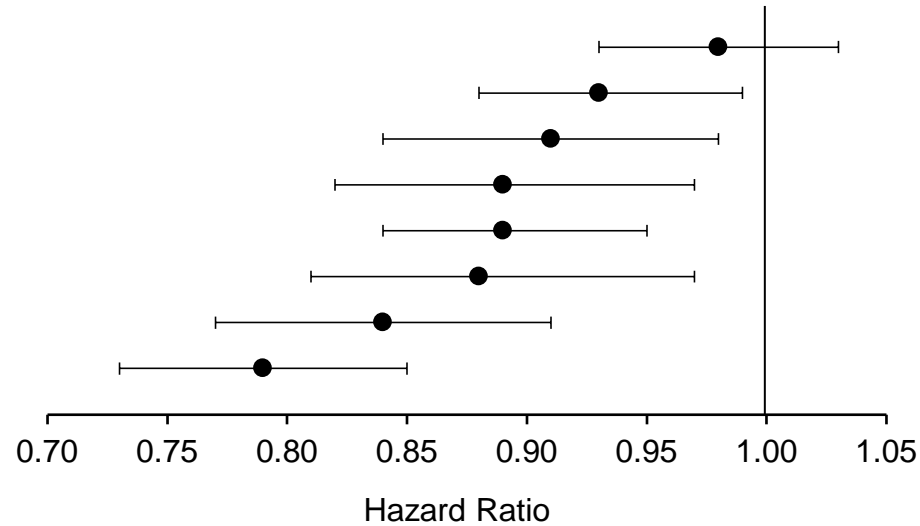
[*Graph appears on next page*.]

A)

Type of Food Replaced

HR (95% CI)

Dairy	0.98 (0.93, 1.03)
Refined grains	0.93 (0.88, 0.99)
Poultry	0.91 (0.84, 0.98)
Eggs	0.89 (0.82, 0.97)
Red meat	0.89 (0.84, 0.95)
Fish	0.88 (0.81, 0.97)
Potatoes	0.84 (0.77, 0.91)
Processed meat	0.79 (0.73, 0.85)

Hazard Ratio

B)

Type of Food Replaced

HR (95% CI)

Dairy	0.97 (0.95, 1.00)
Refined grains	0.93 (0.90, 0.95)
Poultry	0.89 (0.84, 0.94)
Eggs	0.88 (0.83, 0.94)
Red meat	0.88 (0.85, 0.92)
Fish	0.85 (0.79, 0.92)
Potatoes	0.83 (0.77, 0.90)
Processed meat	0.78 (0.74, 0.83)

Hazard Ratio
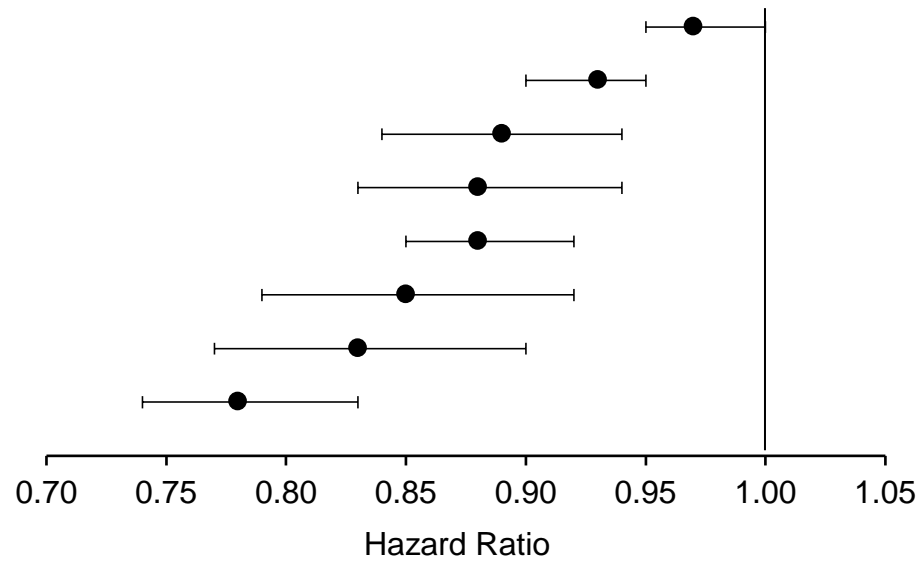
Web Table 5. Pooled associations between total protein, animal protein, and vegetable protein and risk of type 2 diabetes, stratified by weight status, age, physical activity, Alternate Healthy Eating Index score, and family history of diabetes in the Nurses' Health Study, Nurses' Health Study II, and the Health Professionals Follow-up Study

	Q1	Q2	Q3	Q4	Q5	*P*-Trend
Weight status						
			BMI <30			
Total protein						
HR (95% CI)	1.0	0.99 (0.91, 1.07)	1.04 (0.96, 1.13)	1.09 (1.01, 1.19)	1.23 (1.12, 1.35)	<0.001
Animal protein						
HR (95% CI)	1.0	1.08 (1.00, 1.17)	1.10 (1.01, 1.20)	1.19 (1.09, 1.30)	1.31 (1.19, 1.45)	<0.001
Vegetable protein						
HR (95% CI)	1.0	0.99 (0.91, 1.07)	0.93 (0.86, 1.02)	0.94 (0.86, 1.03)	0.93 (0.84, 1.04)	0.24
			BMI ≥30			
Total protein						
HR (95% CI)	1.0	0.91 (0.84, 0.98)	0.93 (0.86, 1.00)	0.97 (0.90, 1.06)	1.01 (0.93, 1.10)	0.14
Animal protein						
HR (95% CI)	1.0	0.94 (0.87, 1.02)	0.95 (0.88, 1.04)	0.99 (0.91, 1.08)	1.07 (0.98, 1.17)	0.01
Vegetable protein						
HR (95% CI)	1.0	0.97 (0.92, 1.03)	0.92 (0.86, 0.98)	0.92 (0.86, 0.98)	0.95 (0.89, 1.02)	0.85
Age [a]						
			Younger			
Total protein						
HR (95% CI)	1.0	0.94 (0.85, 1.05)	0.99 (0.89, 1.10)	1.04 (0.94, 1.16)	0.99 (0.88, 1.11)	0.58
Animal protein						
HR (95% CI)	1.0	1.03 (0.93, 1.15)	0.98 (0.87, 1.09)	1.09 (0.98, 1.23)	1.08 (0.95, 1.22)	0.09
Vegetable protein						
HR (95% CI)	1.0	0.95 (0.86, 1.04)	0.91 (0.82, 1.01)	0.90 (0.80, 1.01)	0.89 (0.78, 1.02)	0.17
			Older			
Total protein						
HR (95% CI)	1.0	0.94 (0.88, 1.00)	0.95 (0.89, 1.02)	0.98 (0.92, 1.05)	1.08 (1.00, 1.16)	0.004
Animal protein						
HR (95% CI)	1.0	0.98 (0.92, 1.05)	1.01 (0.94, 1.08)	1.03 (0.95, 1.10)	1.14 (1.05, 1.23)	<0.001
Vegetable protein						
HR (95% CI)	1.0	1.00 (0.94, 1.07)	0.94 (0.88, 1.00)	0.96 (0.90, 1.03)	0.99 (0.92, 1.06)	0.88
(*Table continues*)						

Physical activity [b]

			Less Active			
Total protein						
HR (95% CI)	1.0	0.94 (0.88, 1.01)	0.95 (0.89, 1.02)	1.01 (0.94, 1.09)	1.01 (0.94, 1.09)	0.19
Animal protein						
HR (95% CI)	1.0	1.00 (0.94, 1.08)	0.99 (0.92, 1.07)	1.04 (0.96, 1.12)	1.11 (1.03, 1.21)	0.001
Vegetable protein						
HR (95% CI)	1.0	0.96 (0.91, 1.02)	0.93 (0.87, 0.99)	0.93 (0.87, 1.00)	0.93 (0.86, 1.01)	0.20
			More Active			
Total protein						
HR (95% CI)	1.0	0.91 (0.82, 1.01)	0.97 (0.88, 1.08)	0.97 (0.88, 1.08)	1.13 (1.01, 1.26)	0.003
Animal protein						
HR (95% CI)	1.0	0.96 (0.86, 1.06)	1.00 (0.90, 1.11)	1.04 (0.94, 1.16)	1.12 (1.00, 1.26)	0.01
Vegetable protein						
HR (95% CI)	1.0	1.02 (0.93, 1.12)	0.92 (0.84, 1.02)	0.97 (0.87, 1.07)	1.02 (0.92, 1.14)	0.54

AHEI score [b]

			Lower AHEI Score			
Total protein						
HR (95% CI)	1.0	0.94 (0.88, 1.00)	0.97 (0.91, 1.04)	1.01 (0.94, 1.08)	1.08 (0.99, 1.17)	0.02
Animal protein						
HR (95% CI)	1.0	1.00 (0.93, 1.07)	0.98 (0.91, 1.06)	1.08 (1.00, 1.16)	1.15 (1.05, 1.25)	<0.001
Vegetable protein						
HR (95% CI)	1.0	0.98 (0.92, 1.03)	0.90 (0.85, 0.96)	0.94 (0.88, 1.00)	0.96 (0.89, 1.04)	0.53
			Higher AHEI Score			
Total protein						
HR (95% CI)	1.0	0.95 (0.86, 1.06)	0.98 (0.88, 1.09)	1.04 (0.93, 1.15)	1.10 (0.98, 1.22)	0.01
Animal protein						
HR (95% CI)	1.0	1.00 (0.91, 1.10)	1.05 (0.95, 1.16)	1.04 (0.94, 1.15)	1.15 (1.03, 1.28)	0.003
Vegetable protein						
HR (95% CI)	1.0	1.03 (0.92, 1.14)	1.00 (0.90, 1.11)	0.98 (0.88, 1.09)	1.03 (0.92, 1.14)	0.63

Family history of diabetes

			No			
Total protein						
HR (95% CI)	1.0	0.94 (0.87, 1.02)	0.98 (0.91, 1.06)	1.01 (0.94, 1.10)	1.04 (0.96, 1.14)	0.09

(*Table continues*)

Family history of diabetes *(continued)*						
		No *(continued)*				
Animal protein						
HR (95% CI)	1.0	0.98 (0.92, 1.05)	0.99 (0.92, 1.06)	1.02 (0.95, 1.10)	1.09 (1.01, 1.18)	0.004
Vegetable protein						
HR (95% CI)	1.0	0.98 (0.91, 1.05)	0.94 (0.87, 1.02)	0.93 (0.85, 1.01)	0.99 (0.90, 1.09)	0.86
		Yes				
Total protein						
HR (95% CI)	1.0	0.93 (0.86, 1.00)	0.94 (0.87, 1.01)	0.99 (0.92, 1.07)	1.06 (0.98, 1.15)	0.03
Animal protein						
HR (95% CI)	1.0	1.01 (0.93, 1.08)	0.98 (0.91, 1.06)	1.06 (0.98, 1.14)	1.13 (1.04, 1.23)	0.002
Vegetable protein						
HR (95% CI)	1.0	0.98 (0.91, 1.05)	0.90 (0.84, 0.98)	0.95 (0.88, 1.04)	0.94 (0.86, 1.03)	0.46

Adjusted for: age, family history of diabetes, smoking, alcohol intake, physical activity, ethnicity, total energy intake, postmenopausal hormone use (NHS, NHS II), oral contraceptive use (NHS II), percentage of energy from *trans-* fat, saturated fat, monounsaturated fat, polyunsaturated fat, dietary cholesterol, dietary fiber, glycemic index, mutual adjustment for percentage of energy from animal and vegetable protein and BMI.

AHEI, alternate healthy eating index; BMI, body mass index; CI, confidence interval; HR, hazard ratio; NHS, Nurses' Health Study; NHS II, Nurses' Health Study II; HPFS, Health Professionals Follow-up Study.

P-interaction (total protein, animal protein, vegetable protein): age (0.96, 0.43, 0.72); BMI (<0.0001, <0.0001, 0.24); physical activity (0.30, 0.94, 0.61); AHEI (0.41, 0.66, 0.55); family history of diabetes (0.74, 0.95, 0.80).

[a] Age was dichotomized as <60 years or ≥60 years in the NHS, <40 years or ≥40 years in NHS II, and <65 years or ≥65 years in the HPFS, based on the different age distributions of the individual cohorts.

[b] Physical activity and AHEI are dichotomized according to cohort-specific medians.