

Attitudes, Activities, and Motivations of Pro-Vaccine Advocates



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Background

Vaccine hesitancy is a growing public health concern and has been classified as a major threat to global health by the WHO. While there has been extensive research on the attitudes of vaccine-hesitant individuals, little is known about the attitudes of pro-vaccination advocates.

Objective

To describe among vaccine advocates: 1) vaccine attitudes, including attitudes about primary care clinic vaccine policies, 2) vaccine advocacy activities, and 3) motivations for vaccine advocacy.

Design and Methods

An internet survey was conducted July-November 2019. Vaccine advocacy groups across the US were invited to partner in survey distribution and participants were recruited from a convenience sample of their members. Advocacy activities were categorized as either policy-related, in-person, or online.

Results

Response rate was 8% (1,239/15,475). Respondents were mostly female, white, and highly educated (Table 1). Most reported Democratic Party affiliation and the most common occupation was healthcare practitioner. The majority of the respondents were from California (45%), Colorado (18%), and Ohio (5%). The majority of respondents (90%) strongly or somewhat agreed that a policy that did not allow patients to refuse or spread-out vaccines would encourage them to join a primary care clinic. The most common policy-related activities were contacting an elected official about vaccines, signing petitions to change vaccine policy, and attending a rally or other organized event to promote vaccine policy (Figure 2). Participants also described ‘other’ policy-related advocacy activities including occupational advocacy work (e.g., physician, nurse, or public health worker) and testifying for pro-vaccine legislation. The most common in-person activities to advocate for vaccines were speaking with a friend or family member, speaking at a school, or speaking at a community event. The most commonly reported online activities to advocate for vaccines were using social media, email and text messages, and interacting with news. The most common motivation for vaccine advocacy was a sense of responsibility as a community member (Figure 1).

Vaccine Advocate Characteristics

Characteristics	Respondents n = 1,031
Mean age (SD)	51 (14.4)
Mean household size (SD)	3 (1.3)
Female % (n)	82 (826)
Race/ethnicity % (n)	
White	87 (881)
Hispanic/Latino	4 (40)
Asian	3 (30)
Black	1 (14)
Native Hawaiian or Other Pacific Islander or American Indian or Alaskan Native	0.6 (6)
Other	4 (42)
Political affiliation % (n)	
Democrat	66 (666)
Republican	11 (114)
Independent	19 (196)
Religious affiliation	
None	40 (403)
Protestant Christianity	25 (251)
Catholicism	16 (159)
Judaism	8 (85)
Other	8 (81)
Education % (n)	
Advanced degree	56 (565)
College degree	34 (345)
Some college	7 (71)
High school or vocational school	3 (26)
Employment	
Employed – full-time	61 (613)
Employed – part-time	14 (142)
Not employed – looking for work	2 (19)
Not employed – not looking for work	7 (73)
Retired	16 (160)
Household Income	
≥ \$150,000	35 (351)
\$75,000-\$149,999	35 (356)
≤ \$74,999	18 (180)
Occupation % (n)	
Healthcare practitioners and technical occupations	38 (382)
Healthcare support occupations	10 (103)
Education, training, and library Occupations	10 (97)
Life, physical, and social sciences occupations	5 (50)
Stay at home parent	5 (47)

Table 1. Characteristics of vaccine advocates. Due to rounding not all totals may add to 100%. Other occupational categories reported by ≤4% of respondents are not shown.

Conclusions

Our sample of vaccine advocates engaged in a variety of different advocacy activities and appeared to be a highly motivated by responsibility to their community as well as a range of other factors. Continued work to better understand vaccine advocates may help inform efforts to curb vaccine hesitancy and influence those who accept vaccines to advocate for vaccines.

Motivating factors

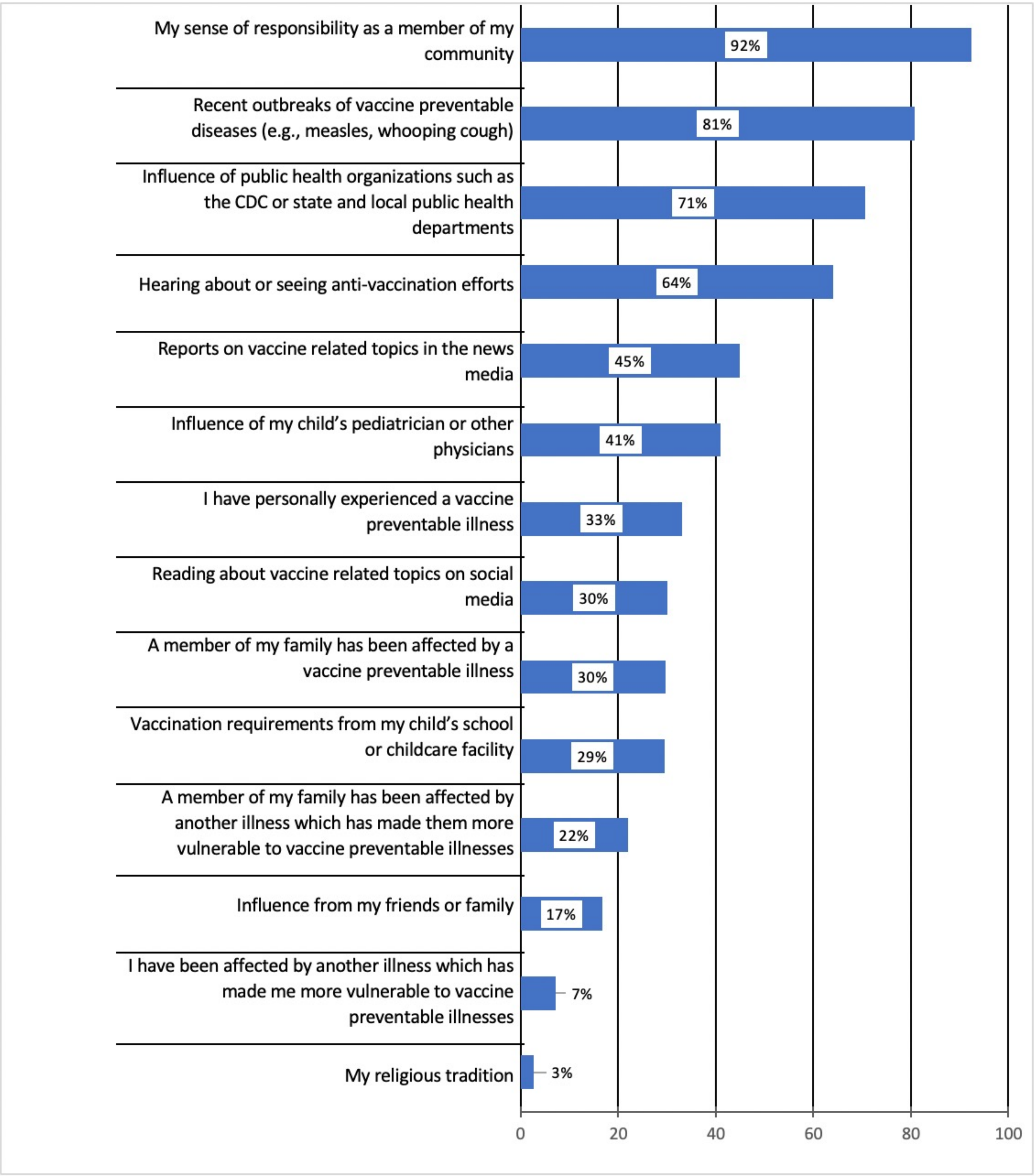


Figure 1. Motivating factors for vaccine advocates (n = 1,041)

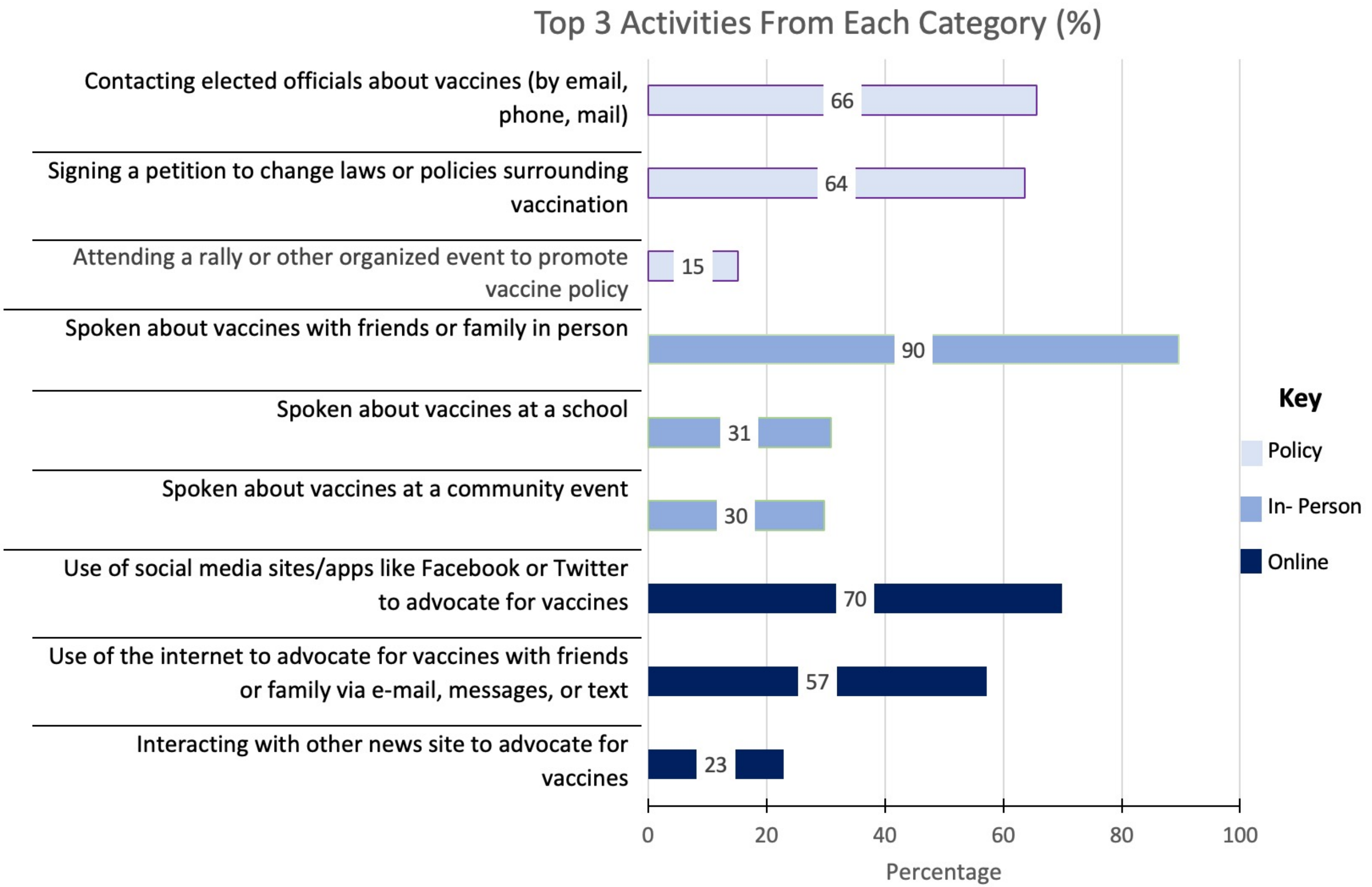
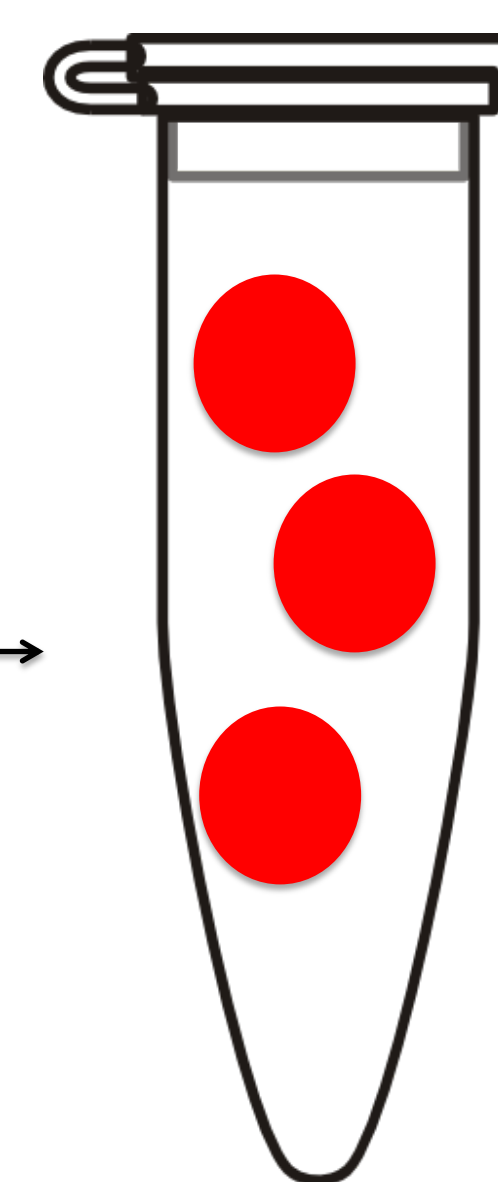


Figure 2. Three Most Commonly Reported Policy-Related, In-Person, and Online Advocacy Activities (n = 1,108)



DBS Card

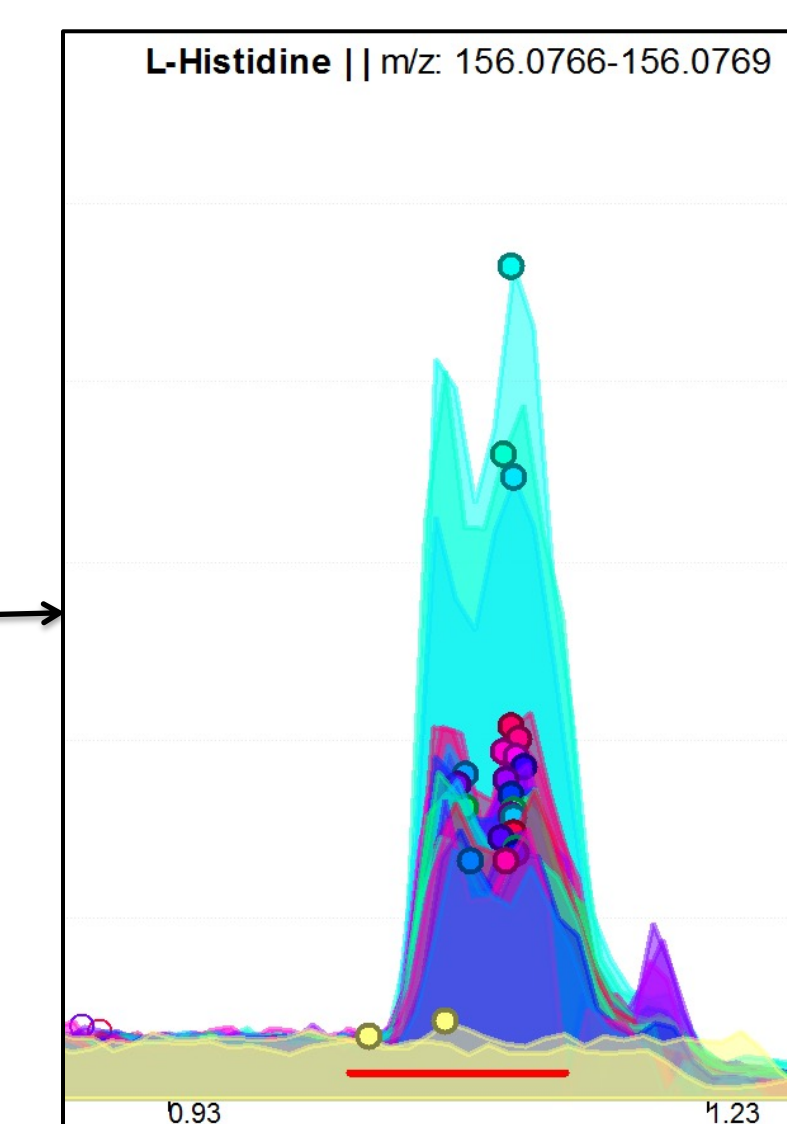
3 punches



Mass spec
Analysis



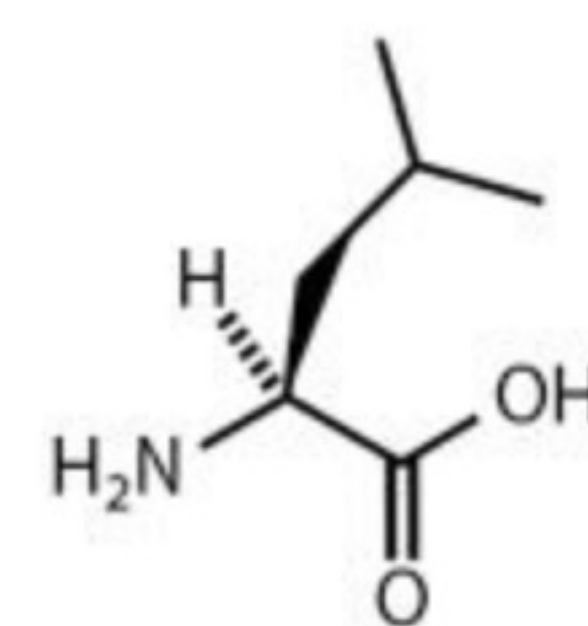
Blood spot
data



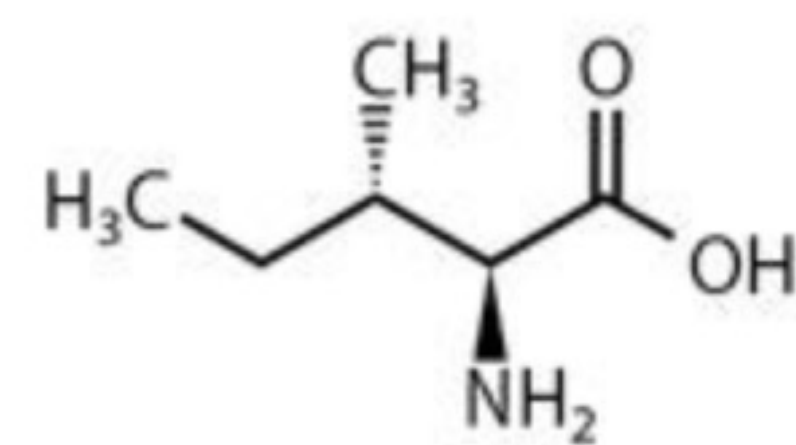
Arm 1

Arm 2

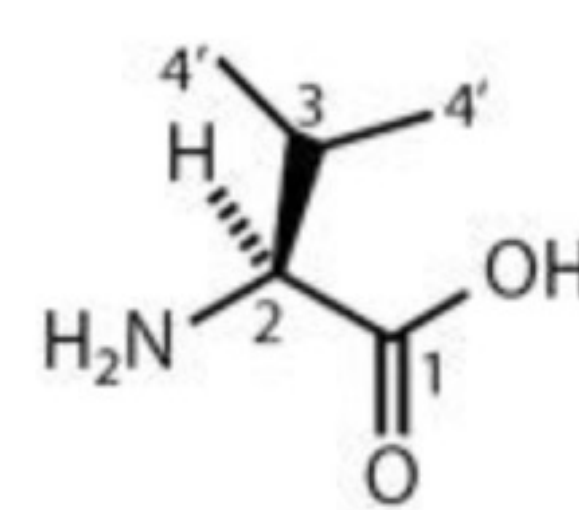
BRANCHED CHAIN AMINO ACIDS



LEUCINE



ISOLEUCINE



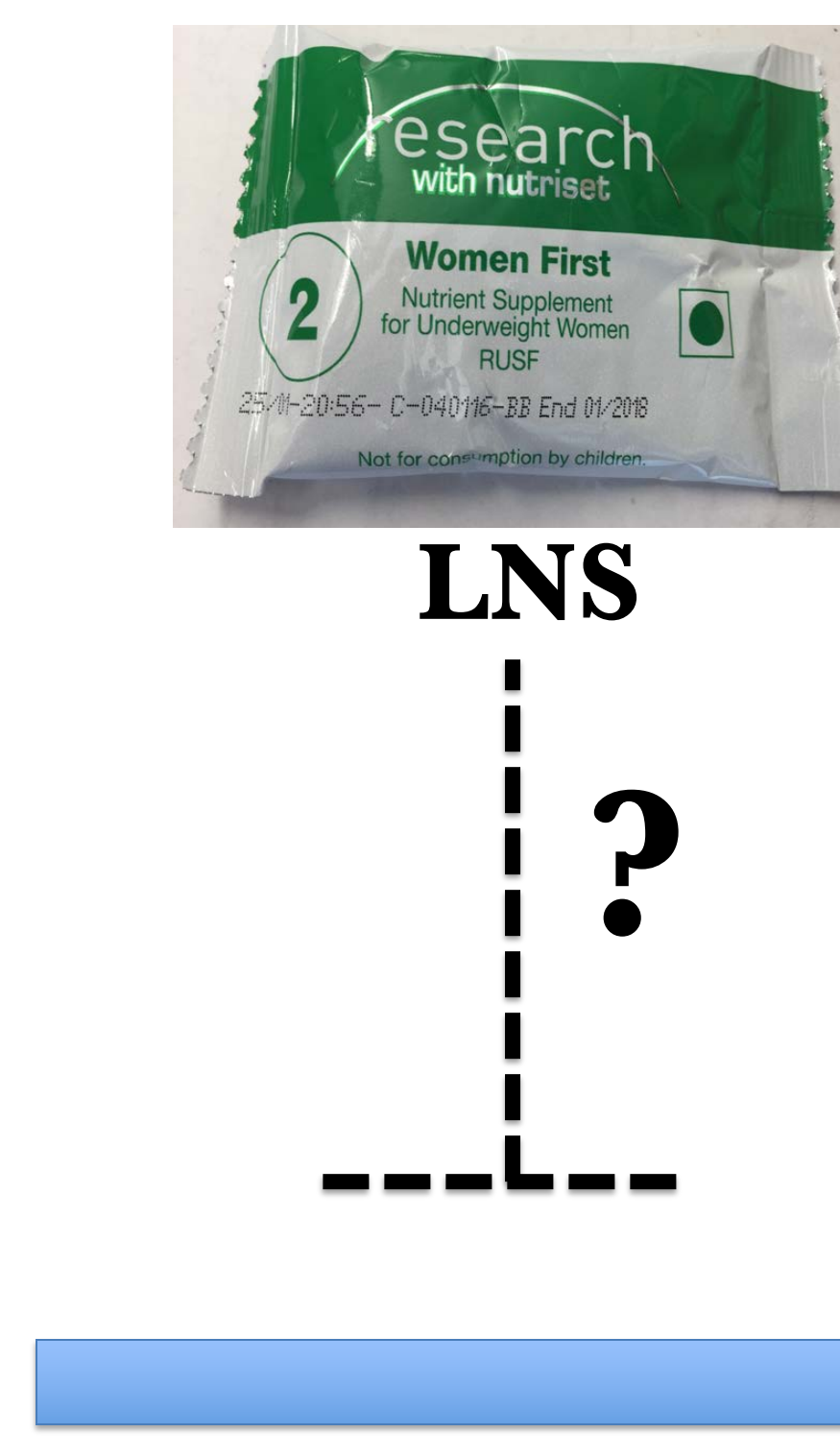
VALINE

LNS

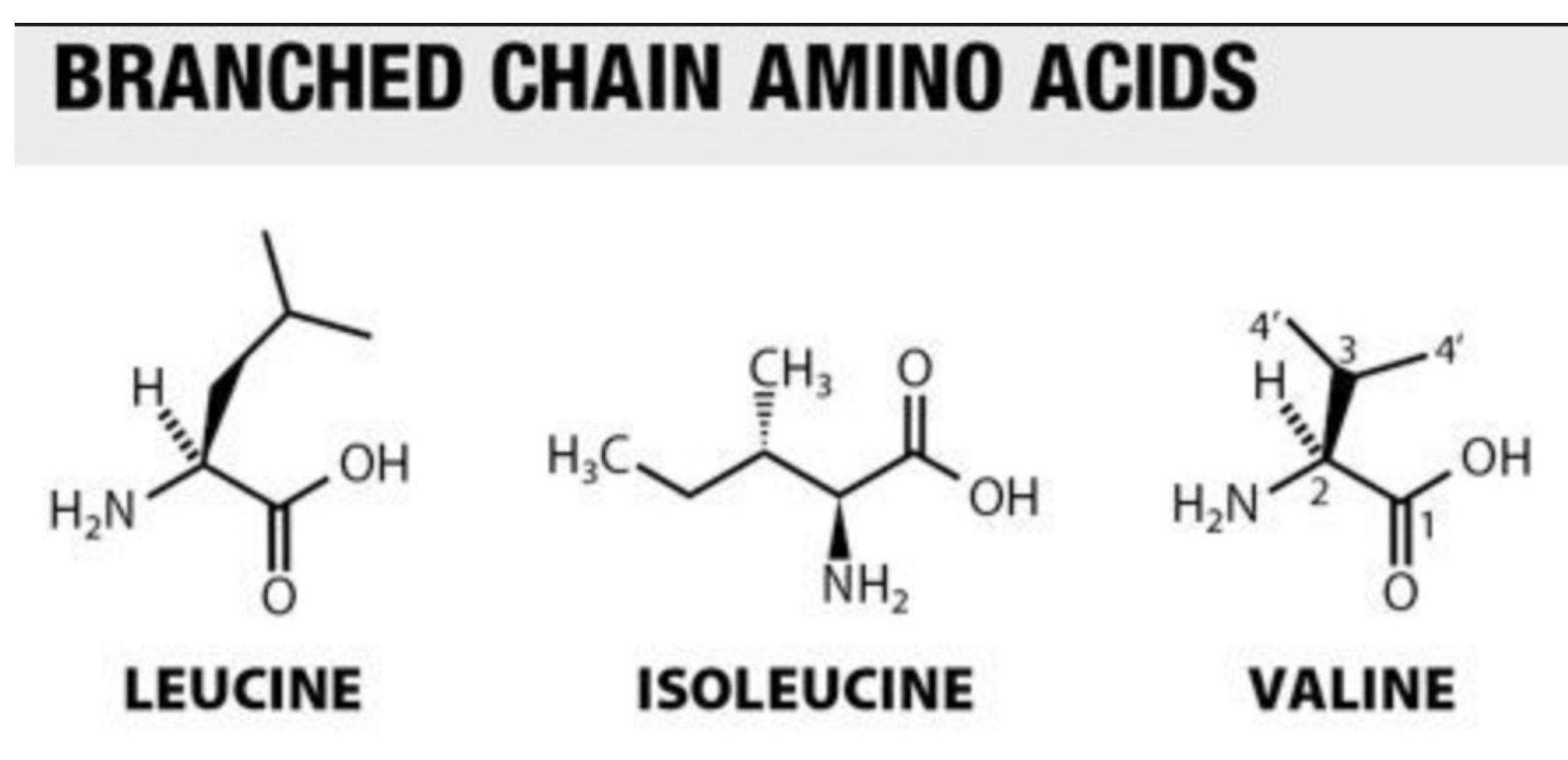
Decreased

BCAA

I



Elevated BCAA



Obesity

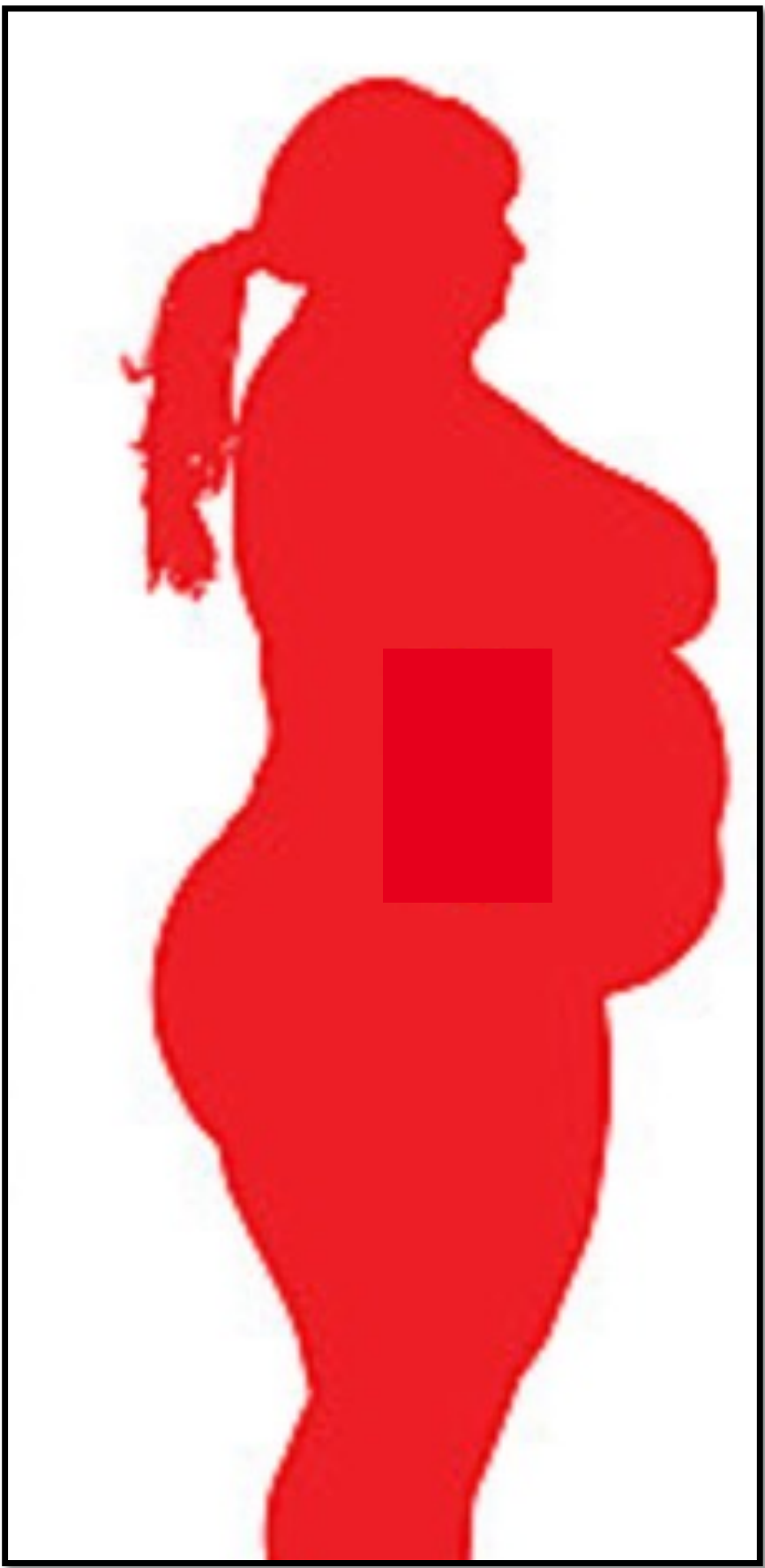


**Insulin
Resistance**



LNS

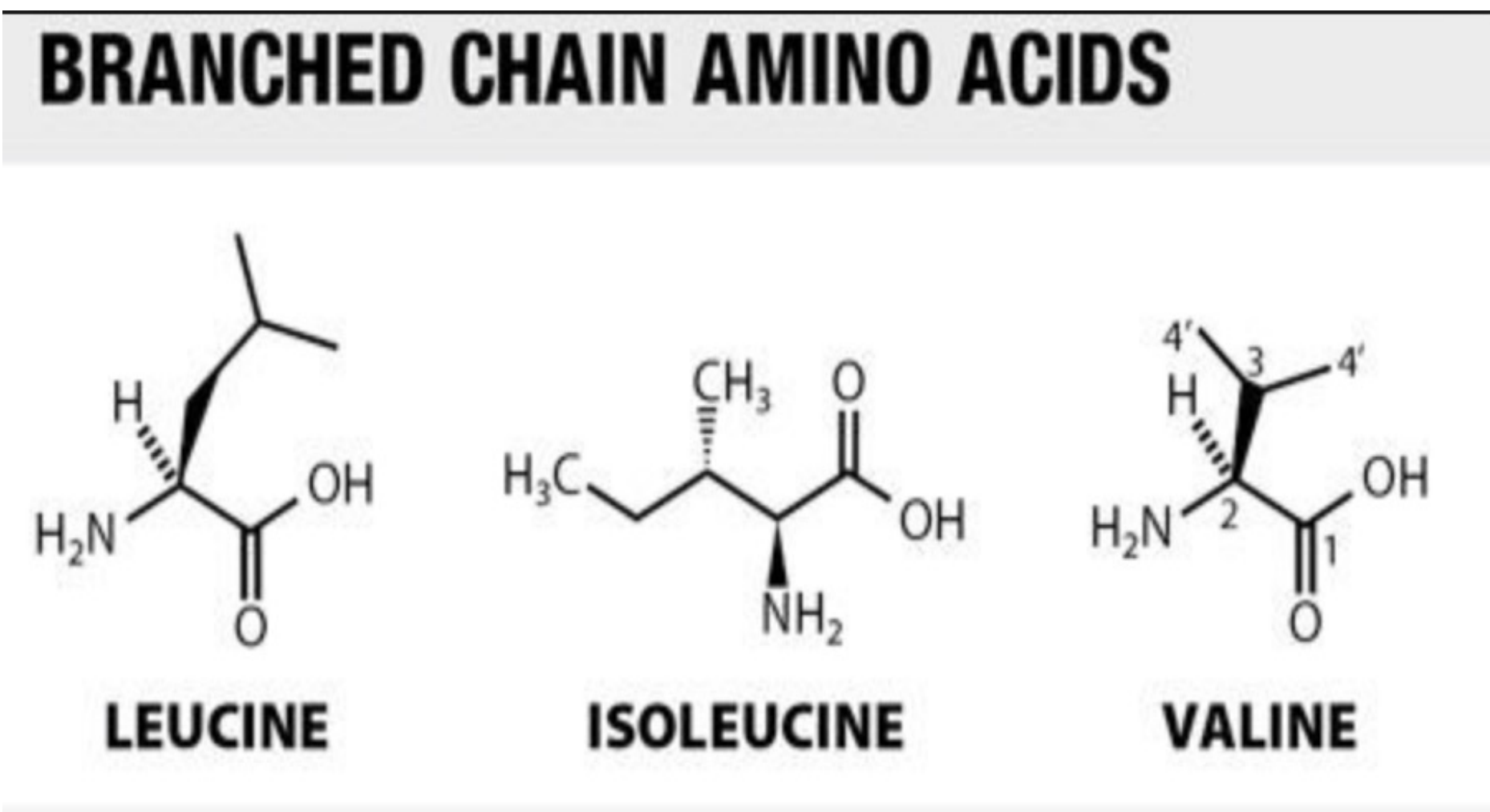
new figure



- LNS

+ LNS

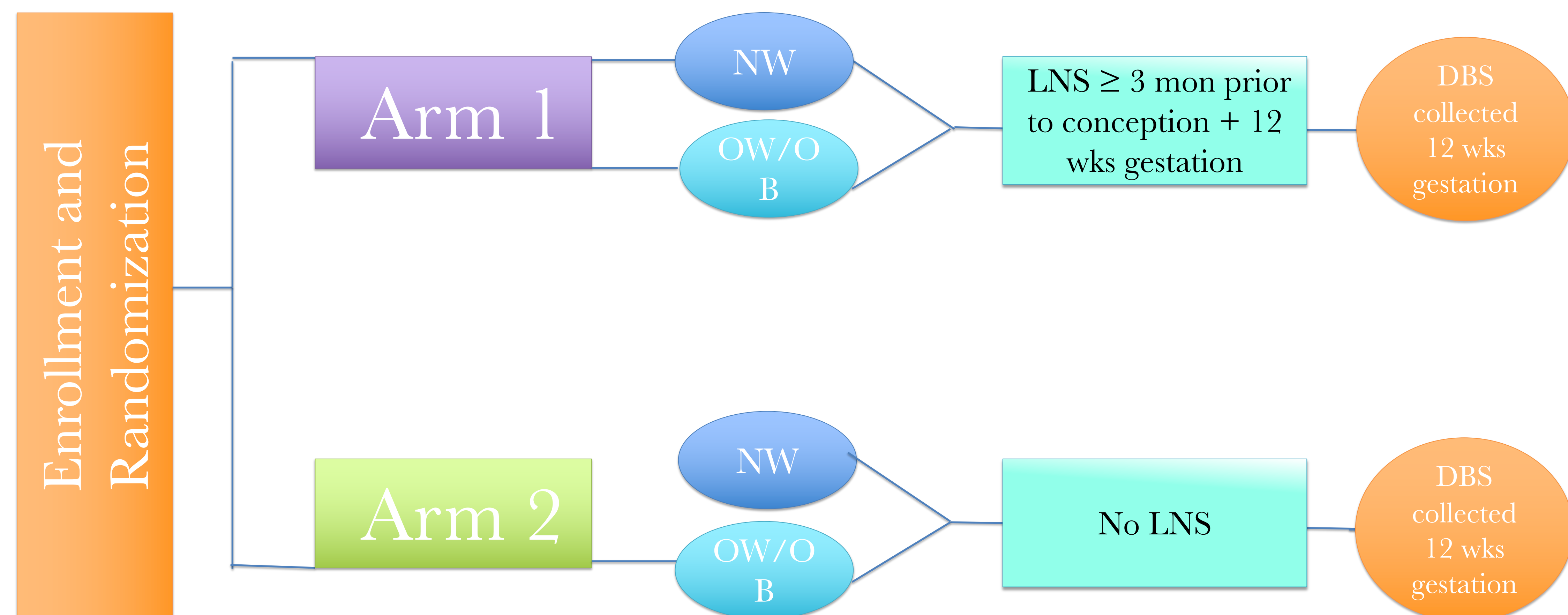
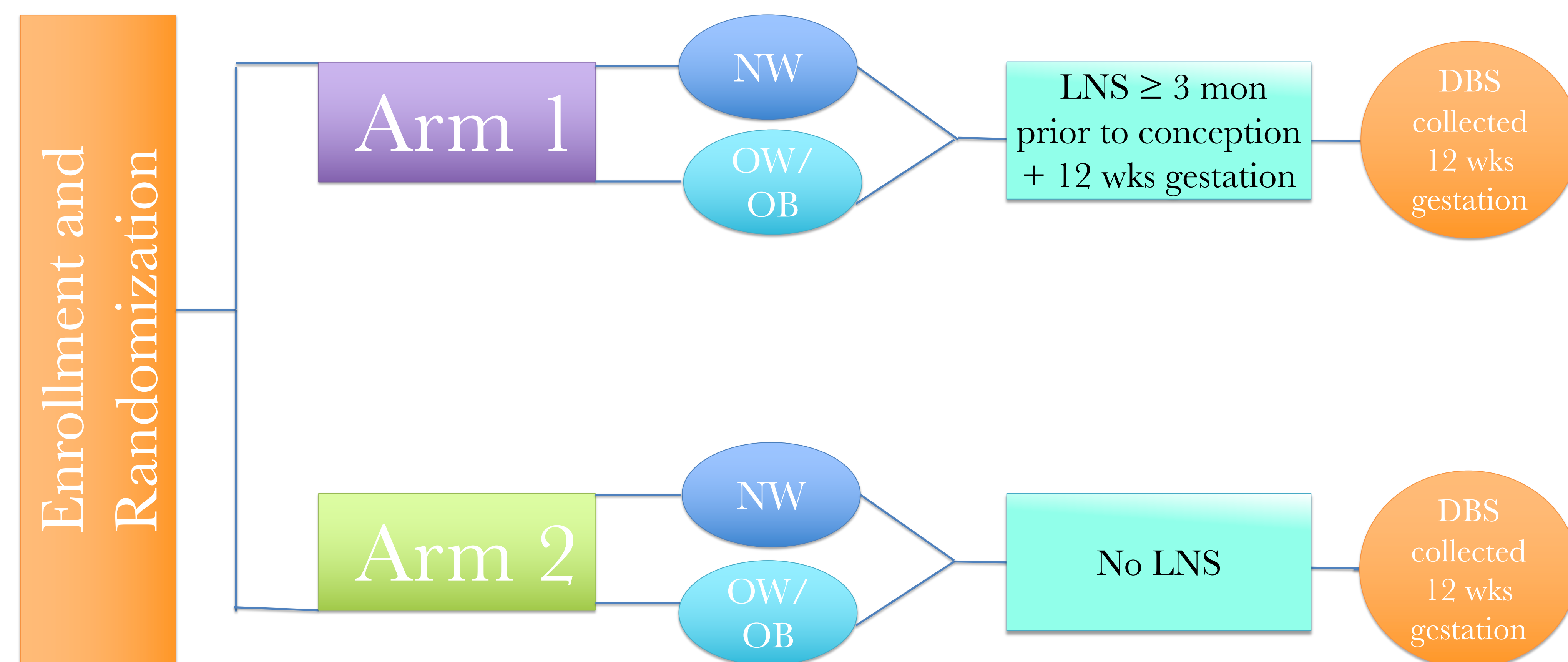
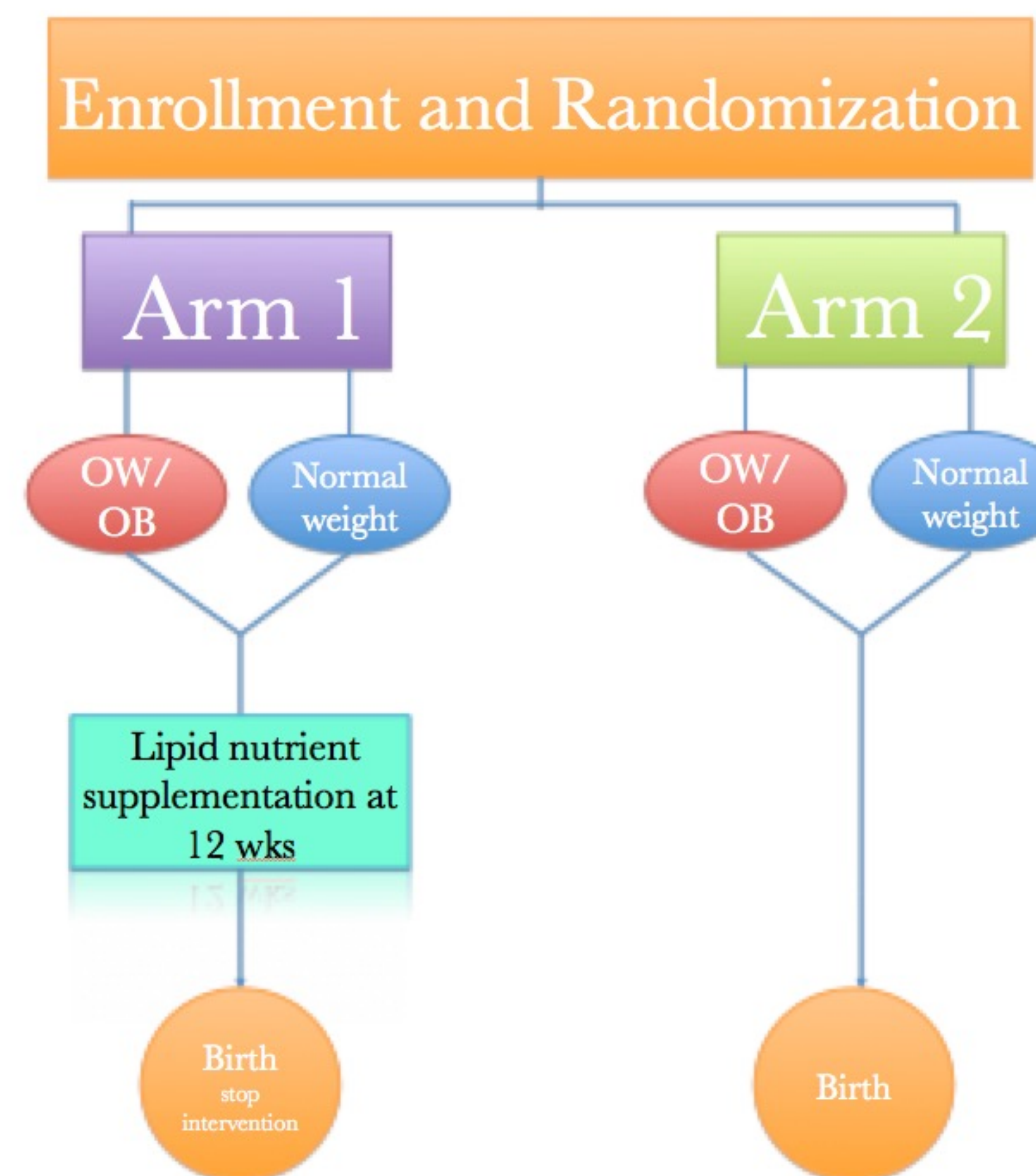
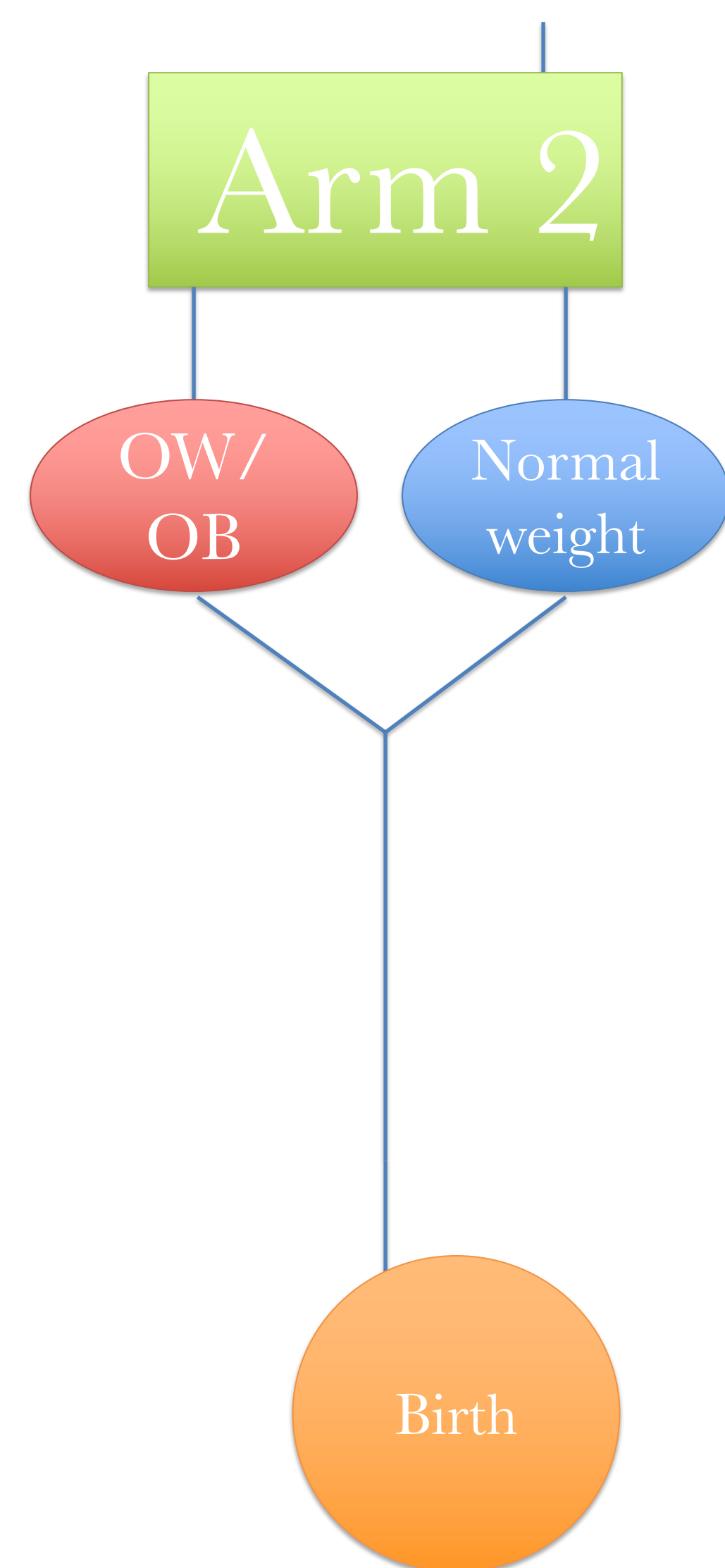
Elevated BCAA

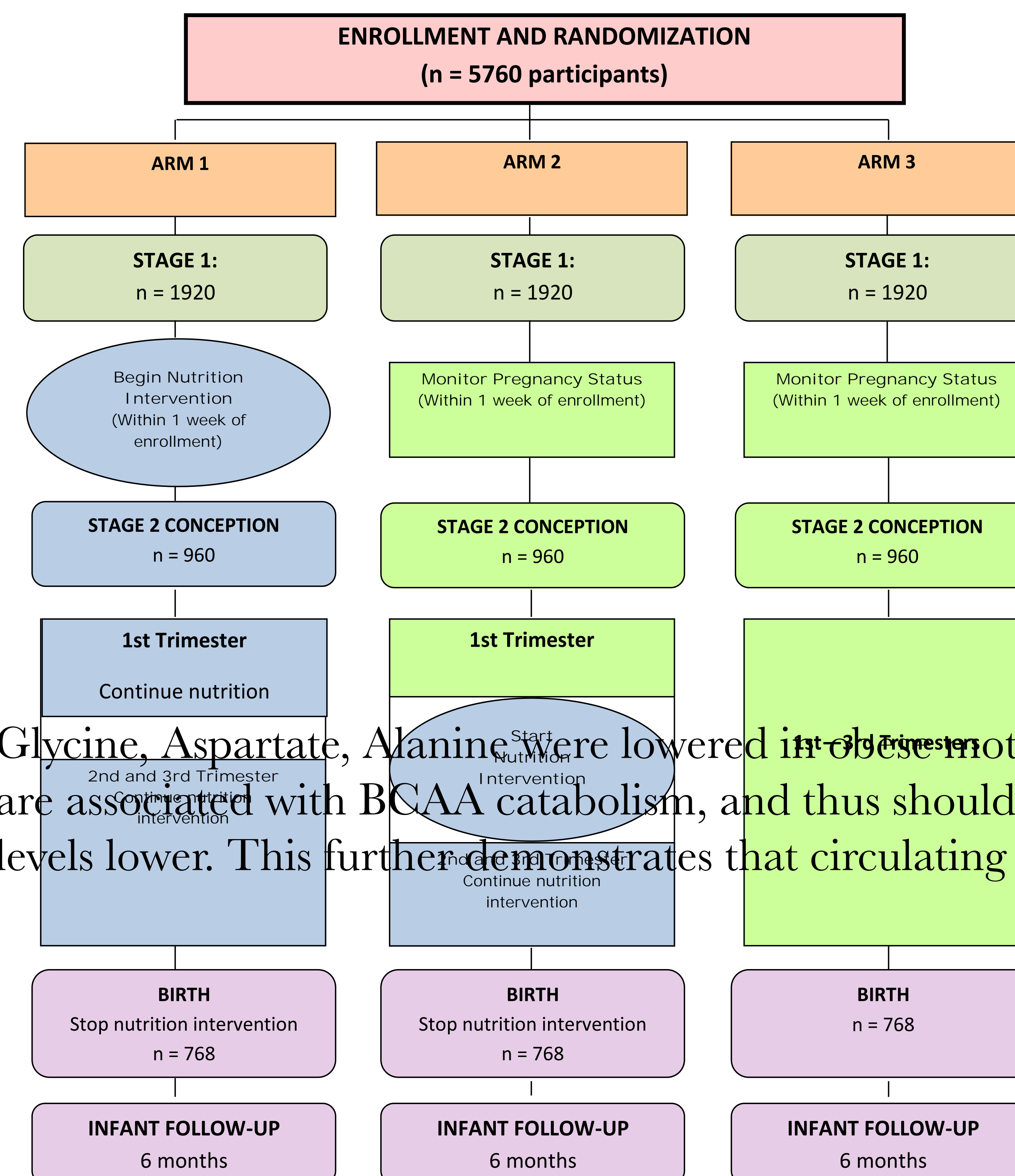


BCAA??

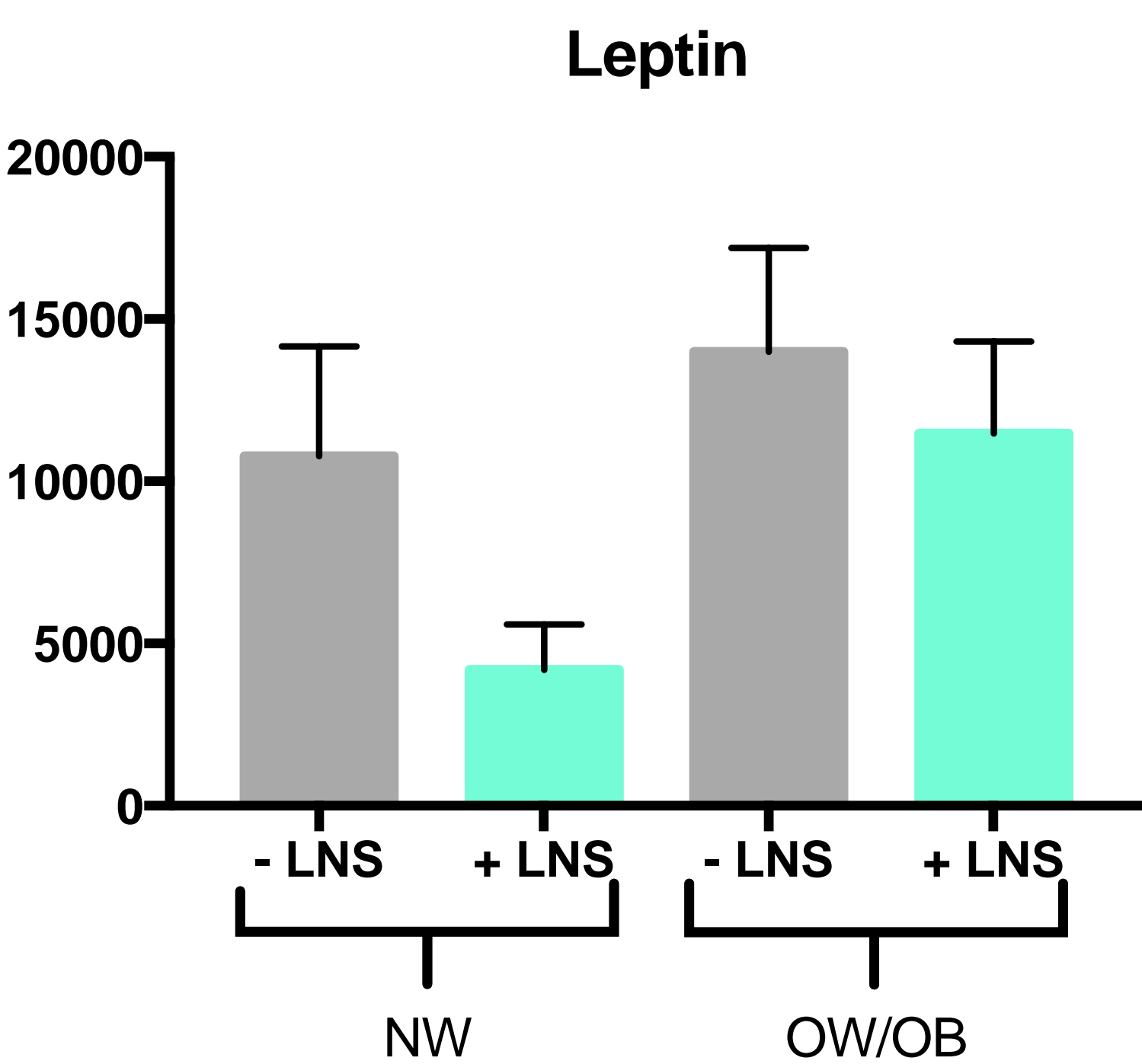
**Obesity
Related
Comorbidities**

**Obesity
Related
Comorbidities**

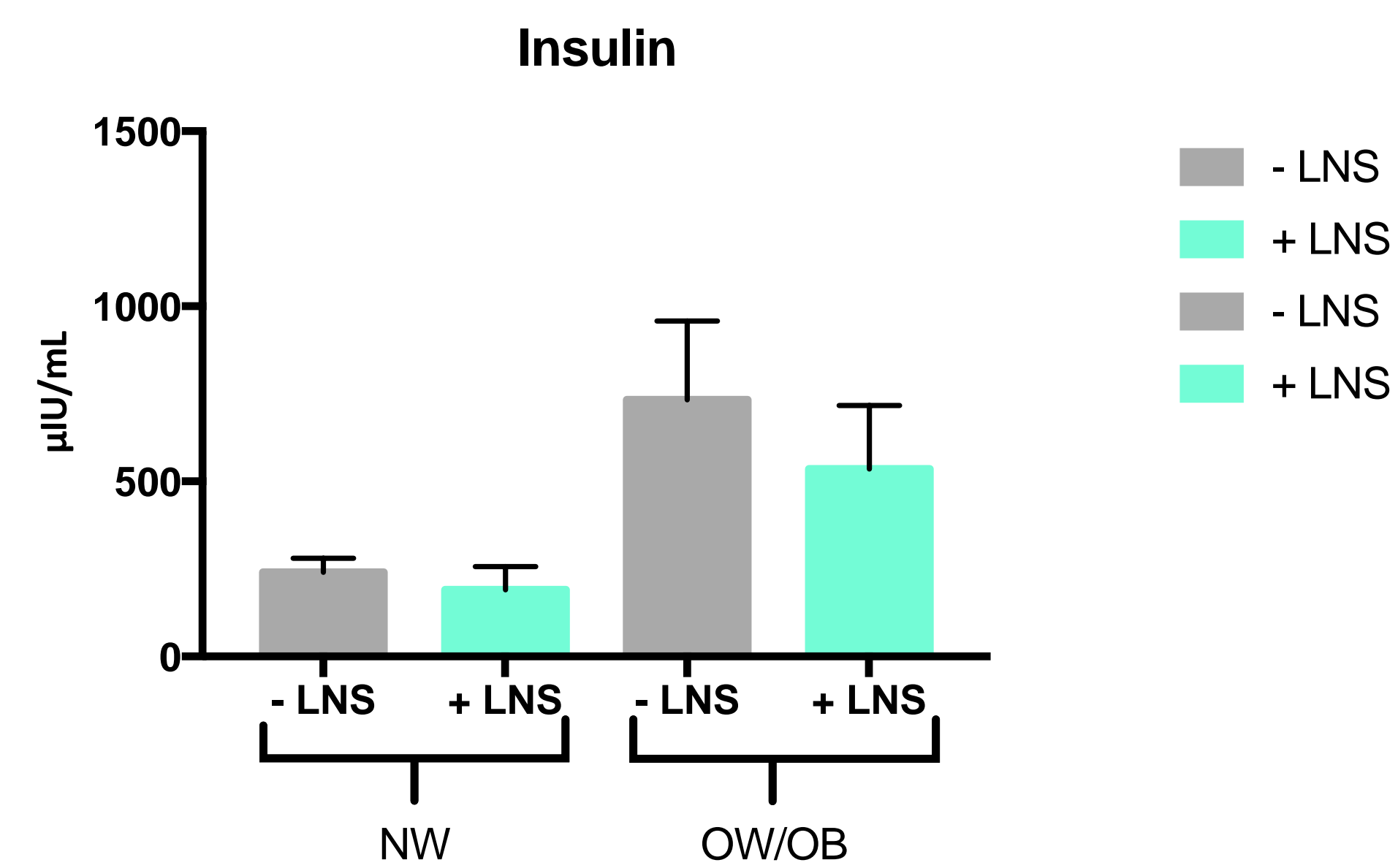




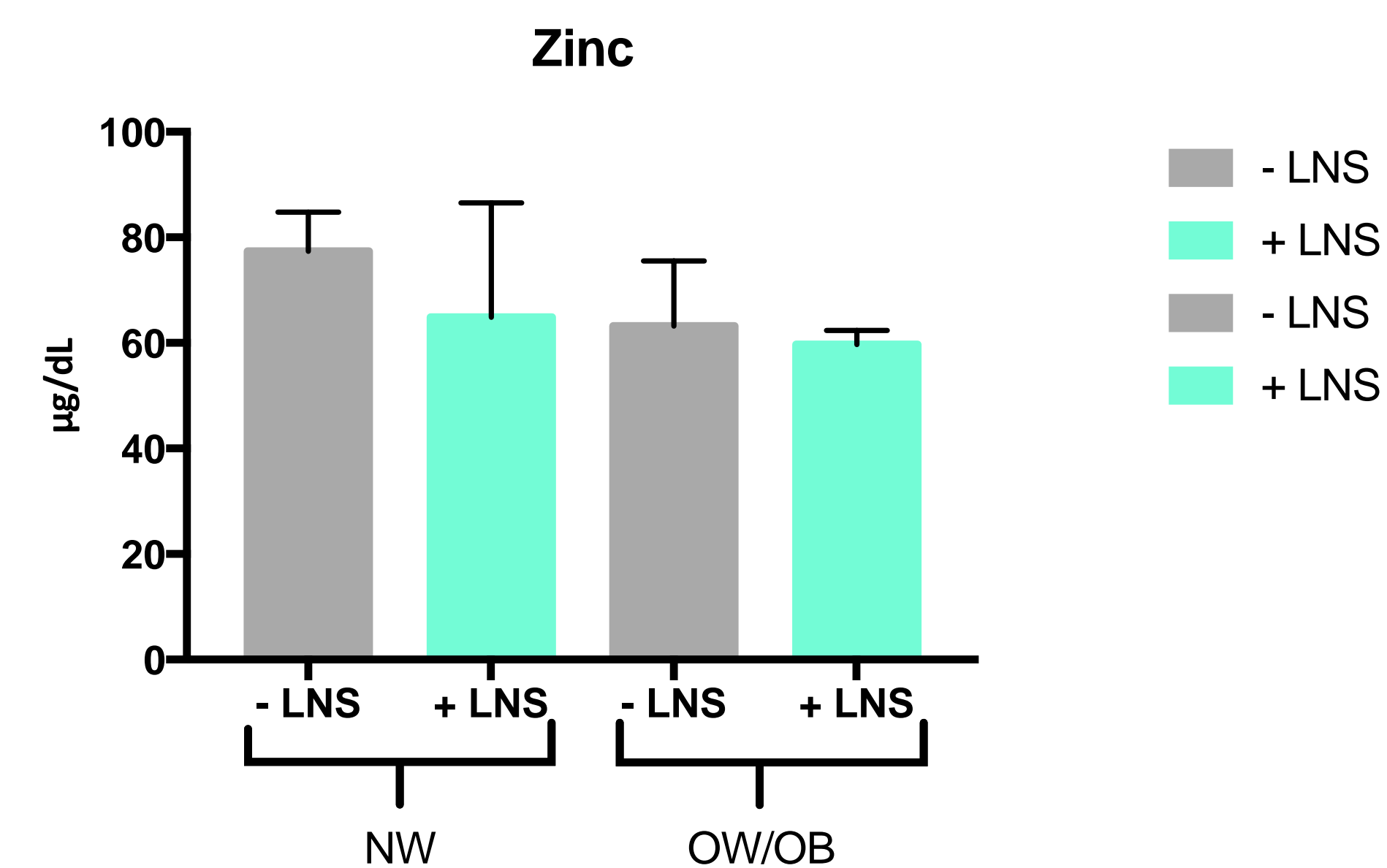
Glycine, Aspartate, Alanine were lowered in obese mothers receiving the +LNS. They are associated with BCAA catabolism, and thus should be less abundant as BCAA levels lower. This further demonstrates that circulating BCAA reduction took place



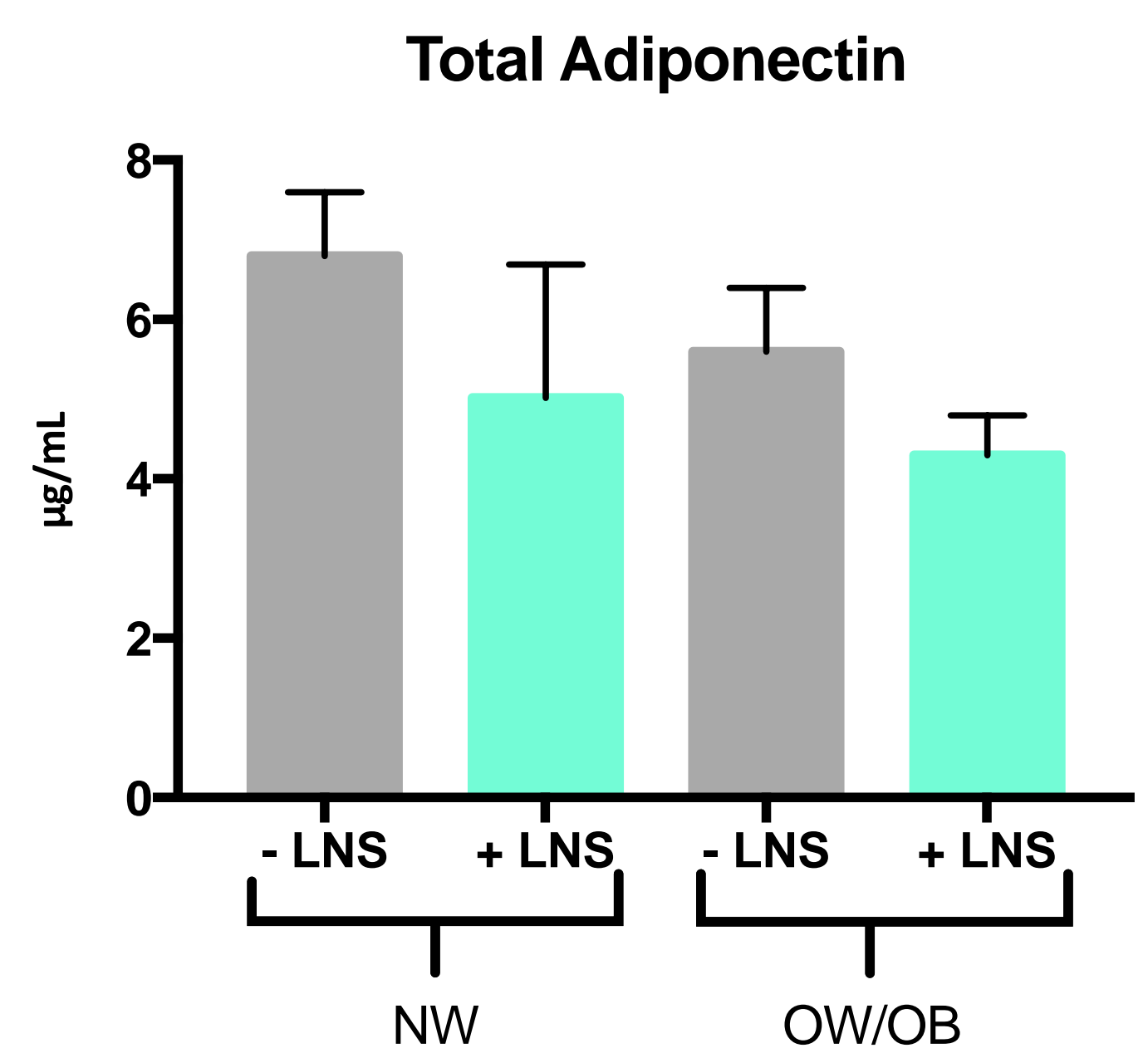
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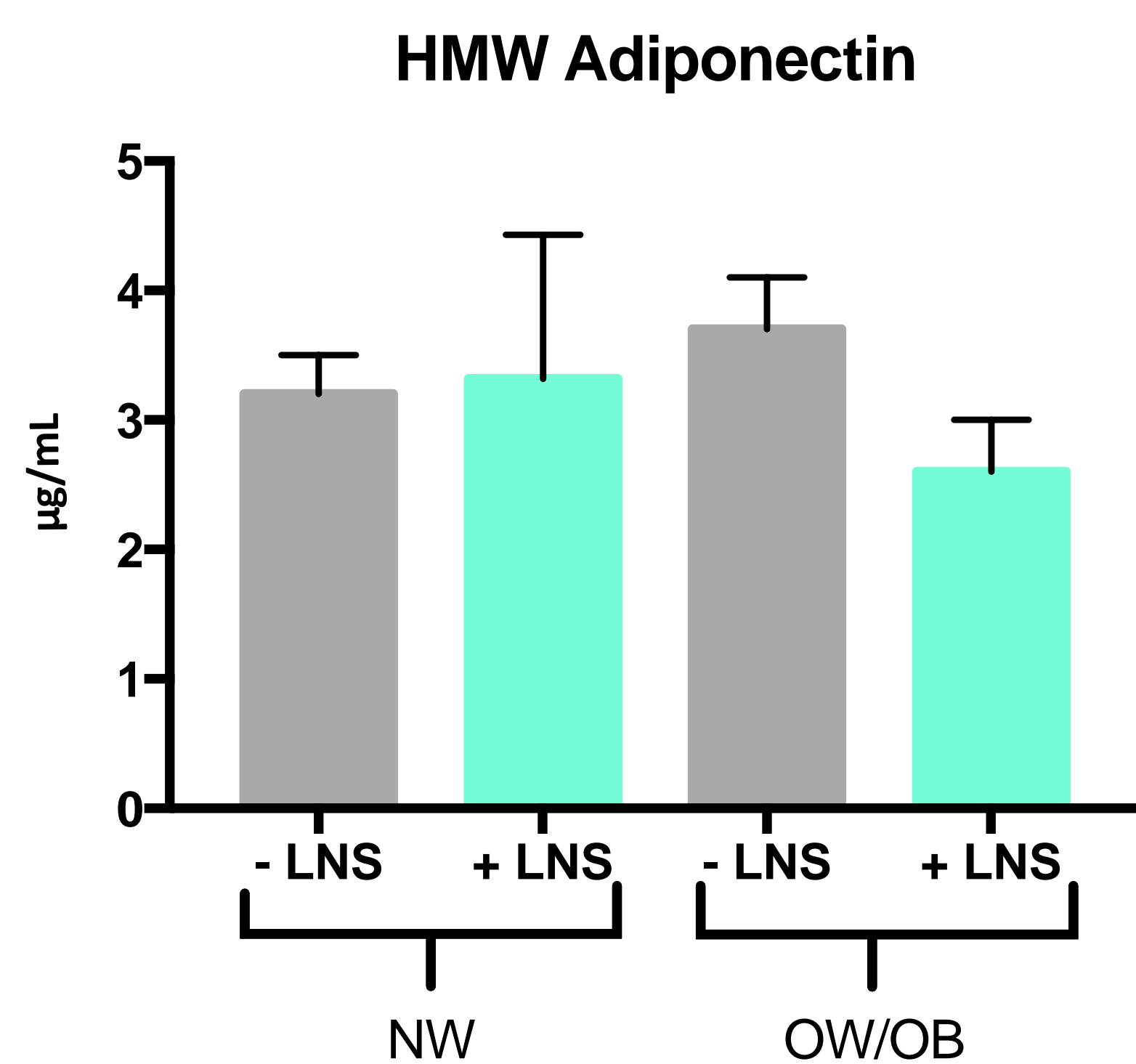
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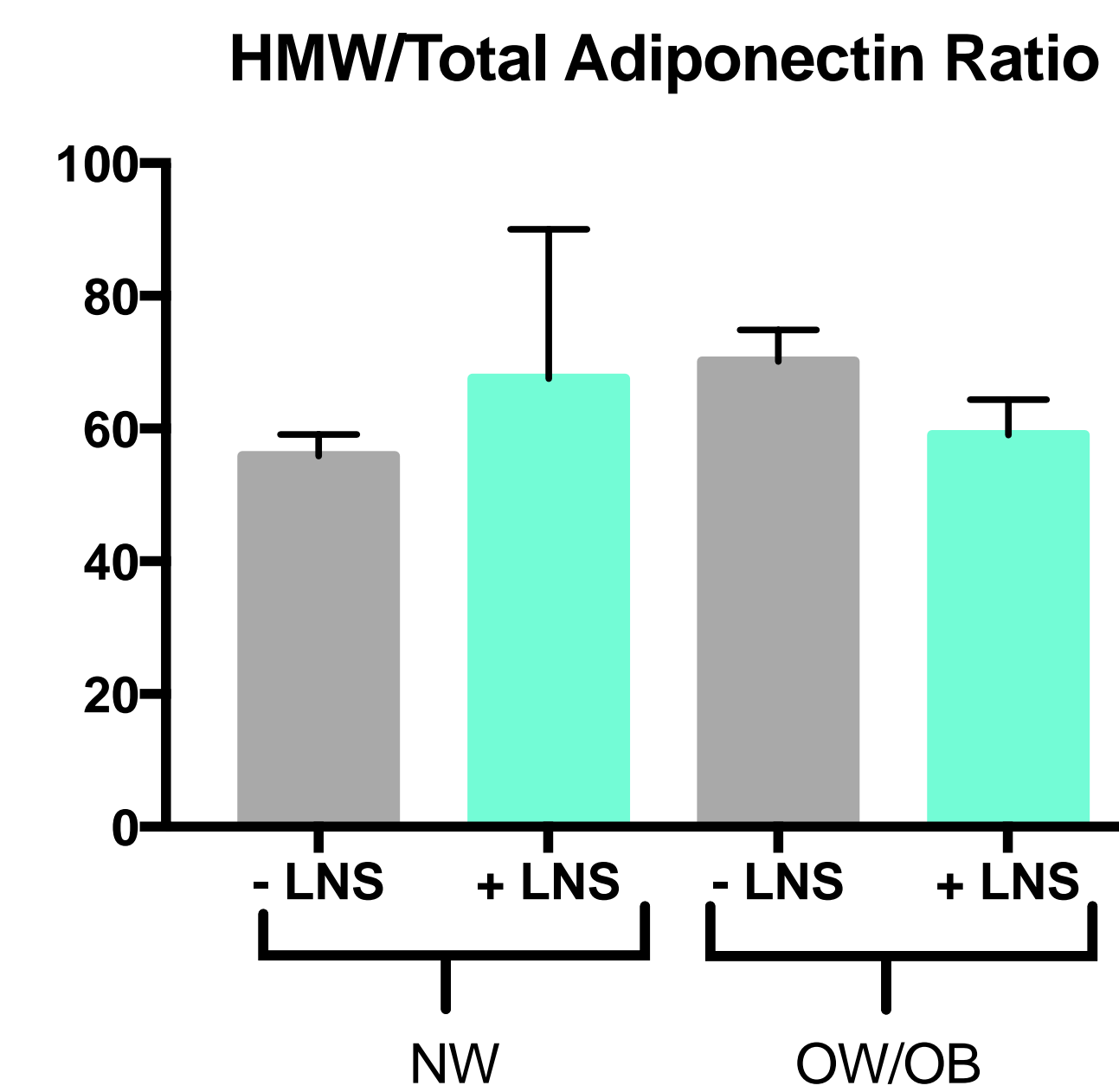
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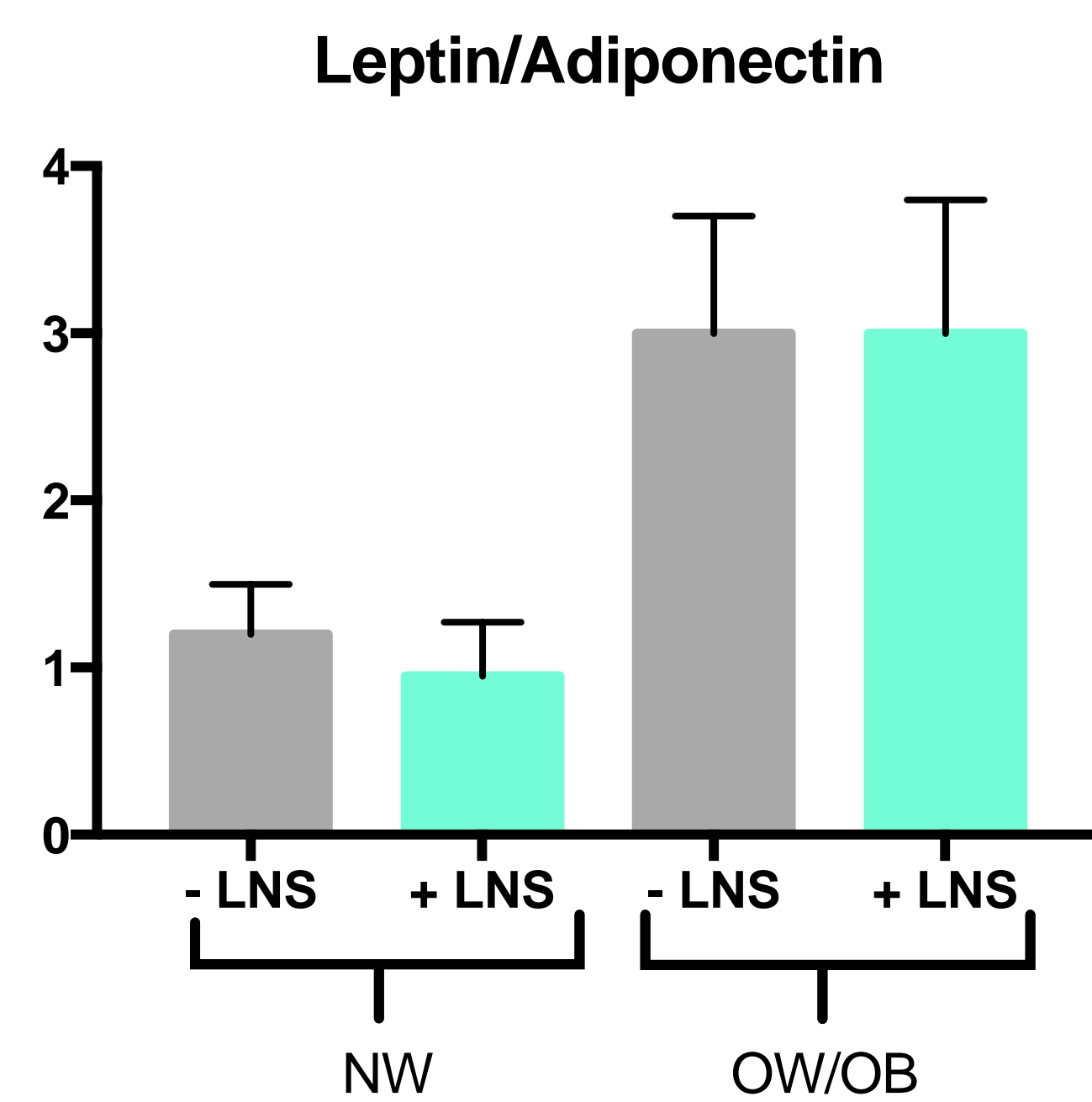
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+ LNS
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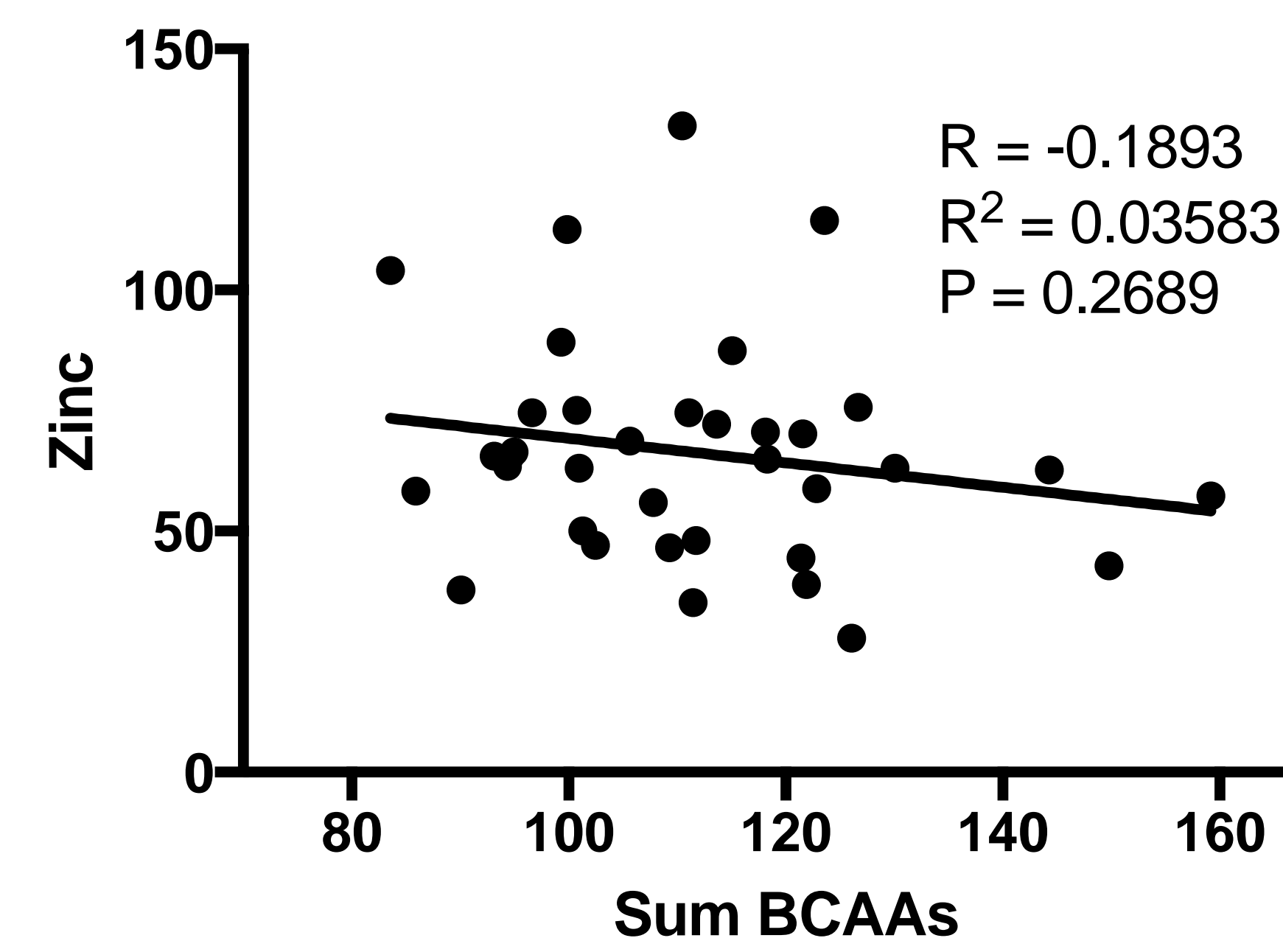
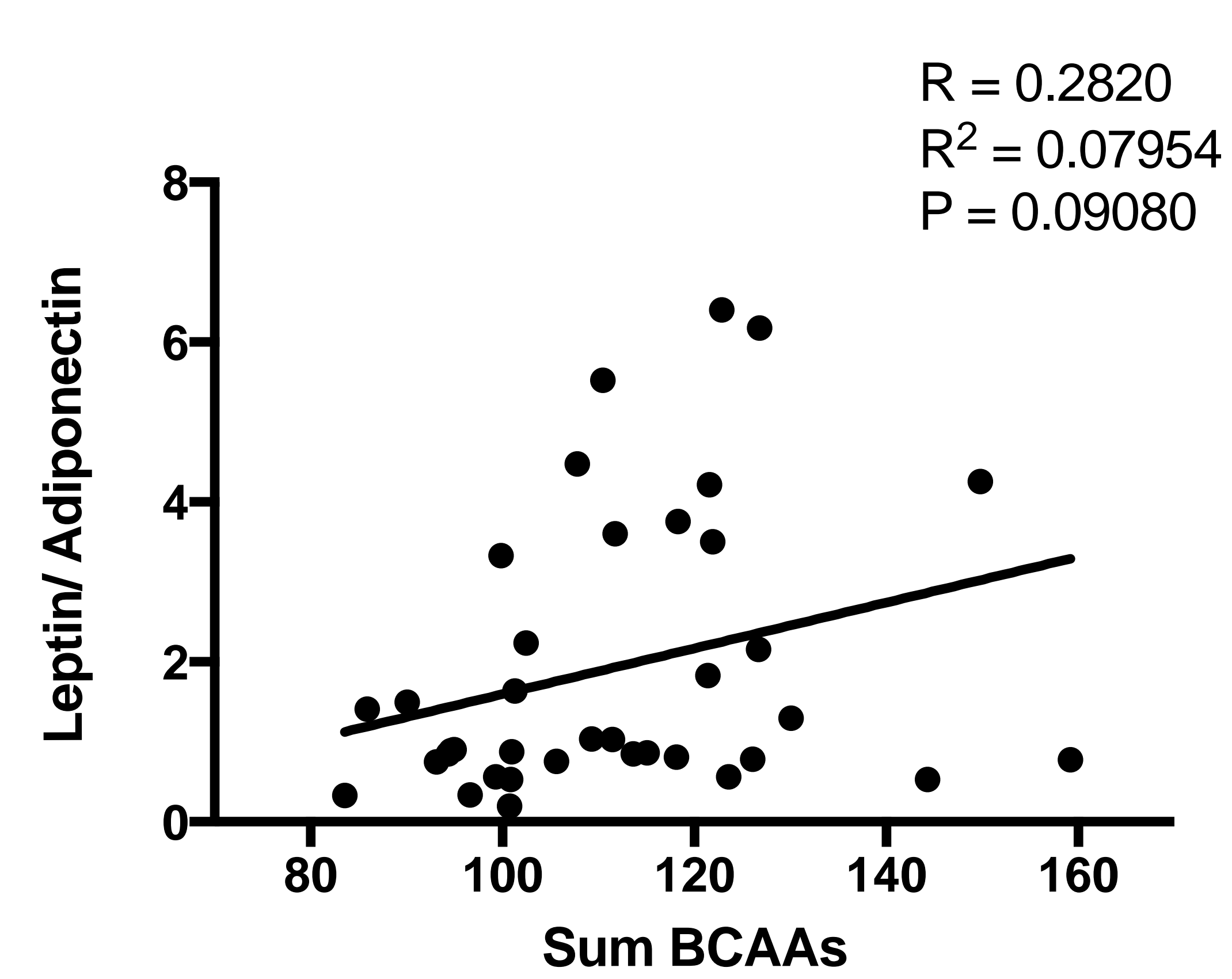
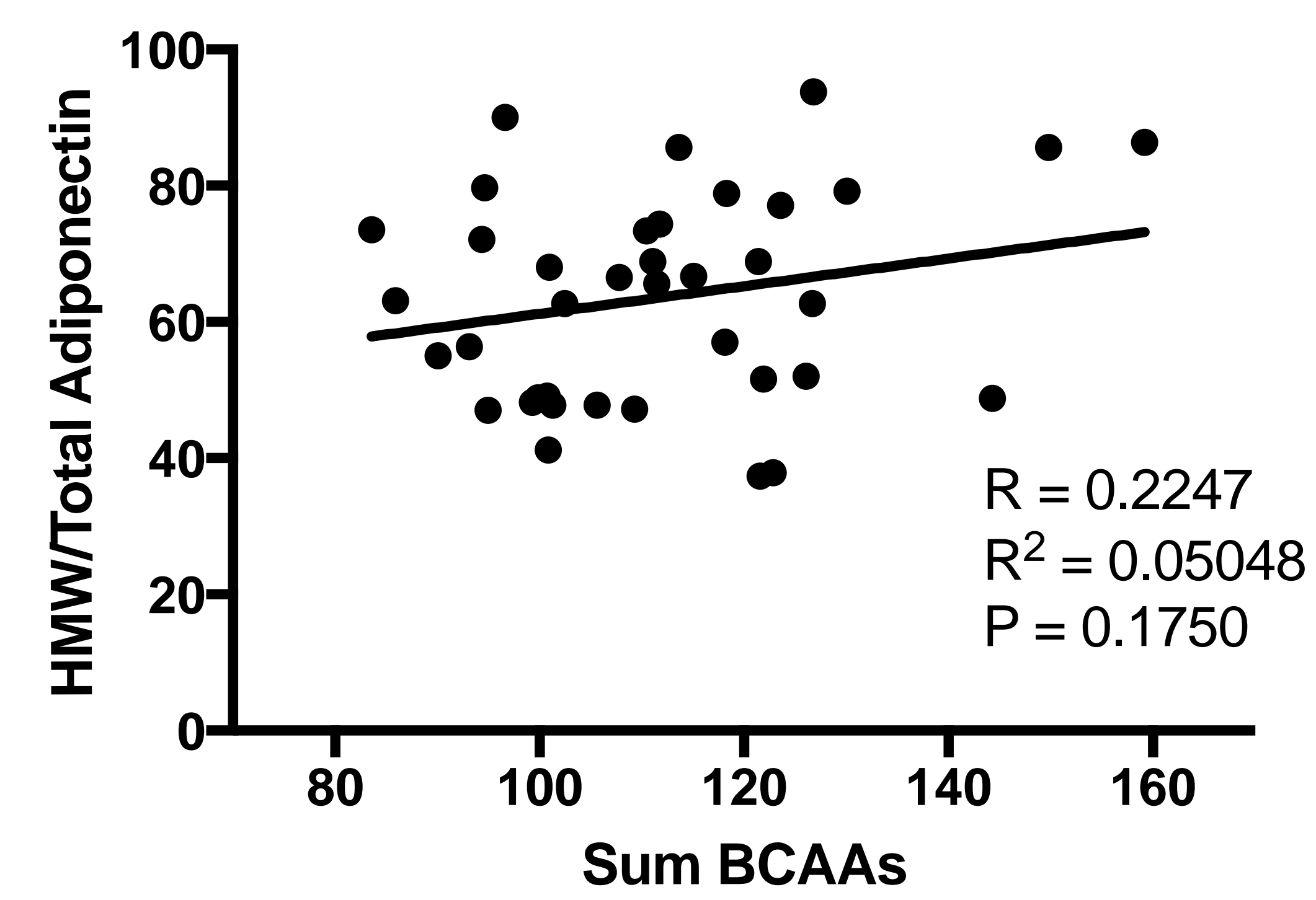
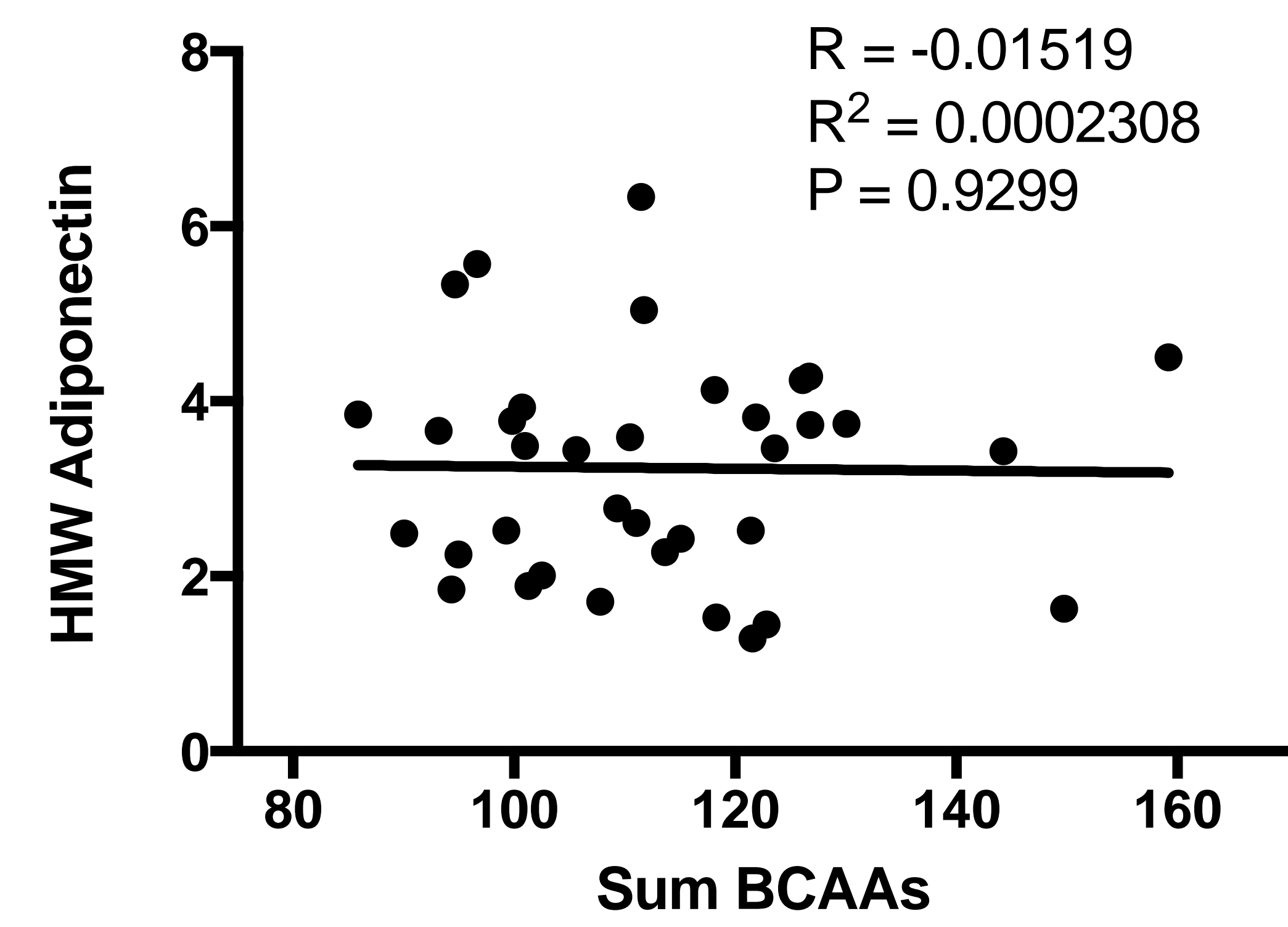
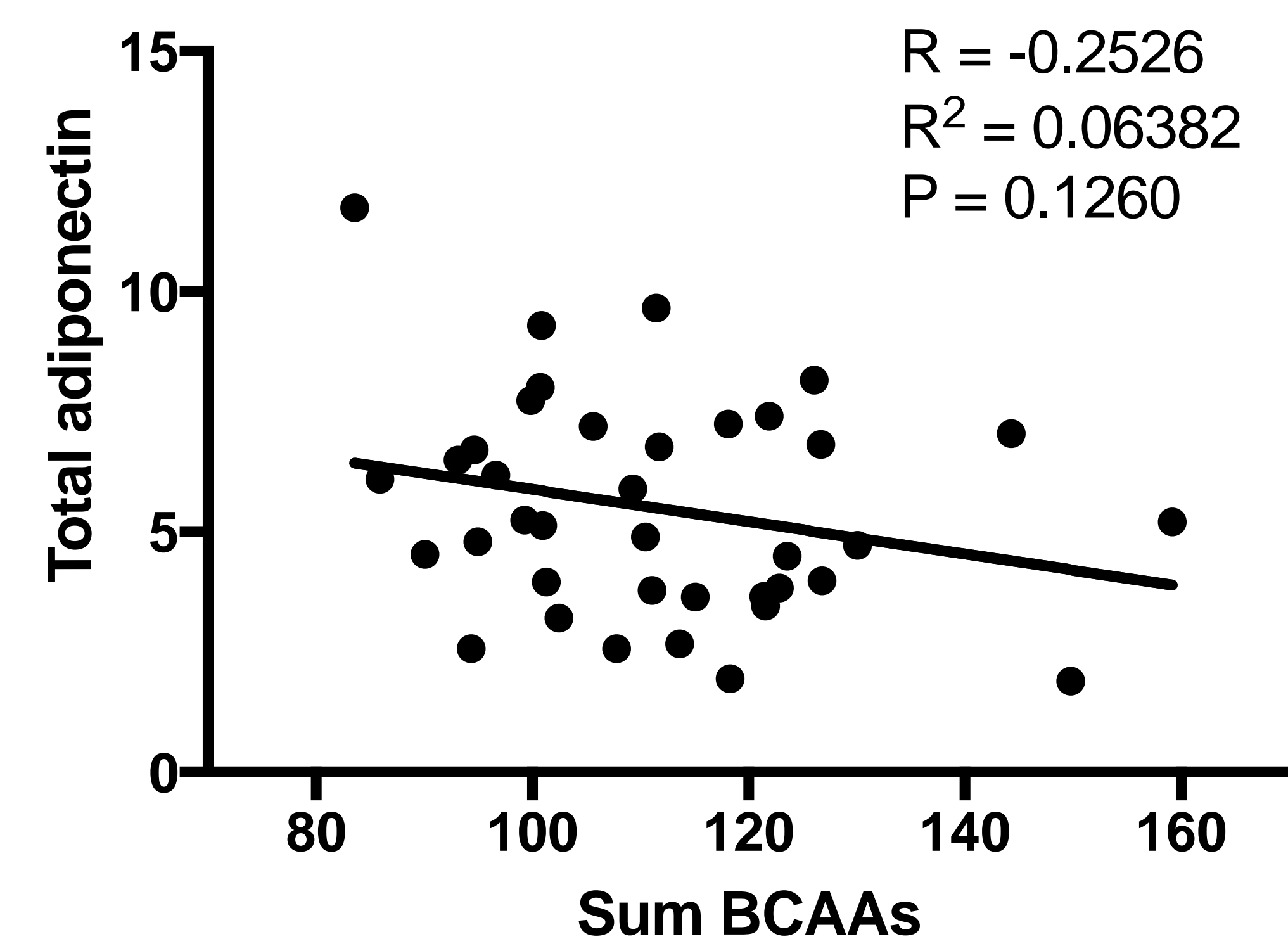
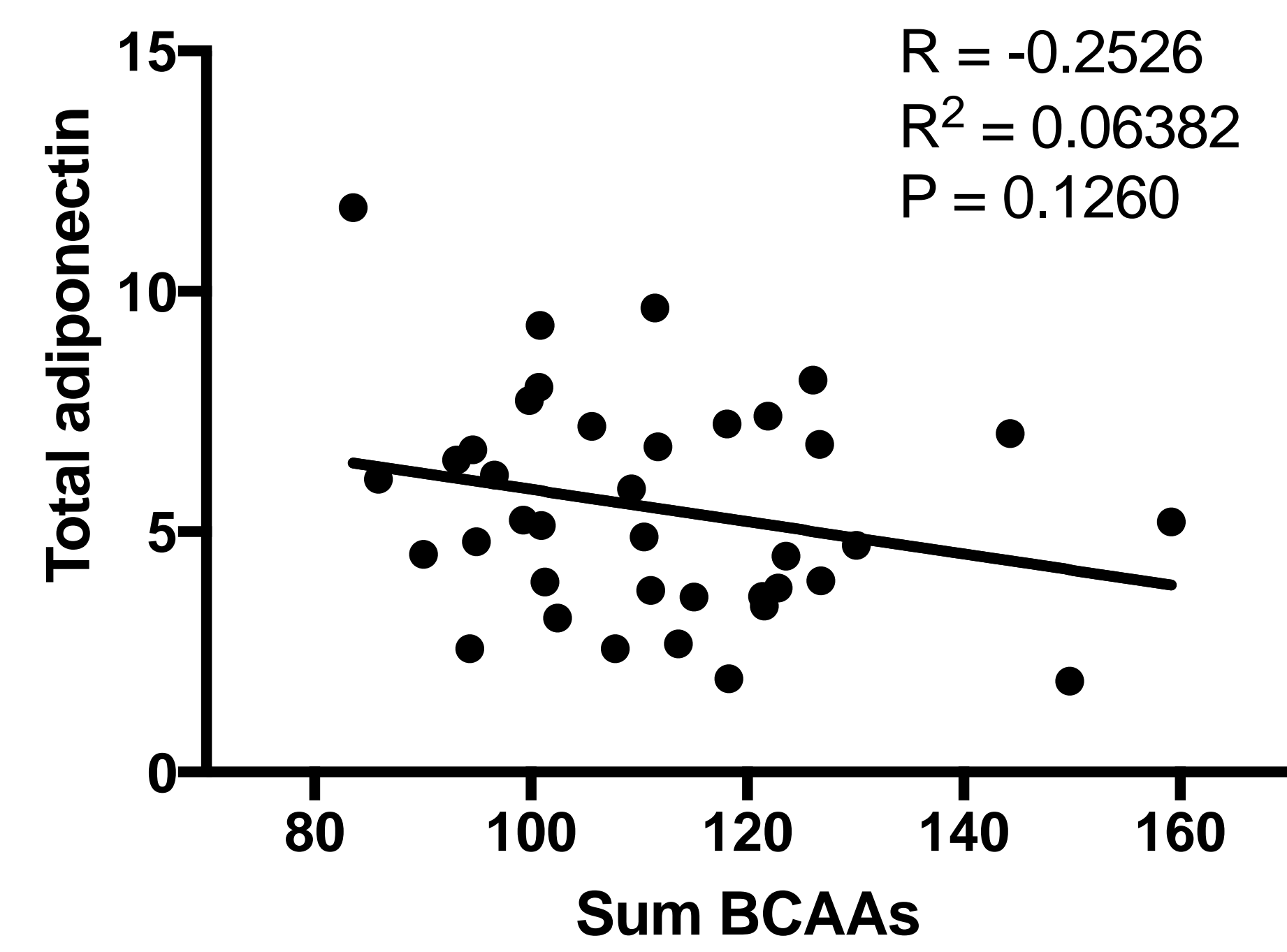
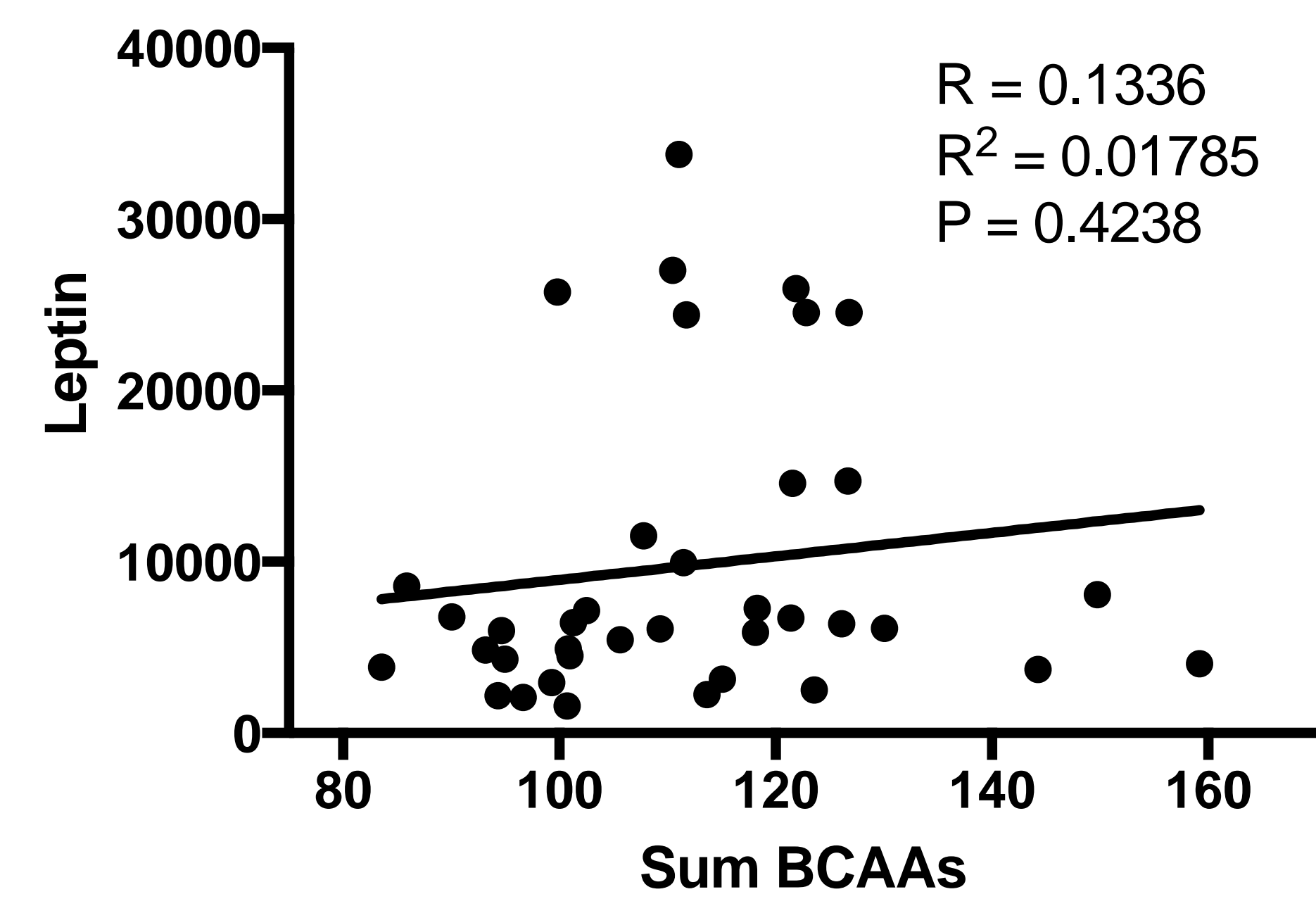


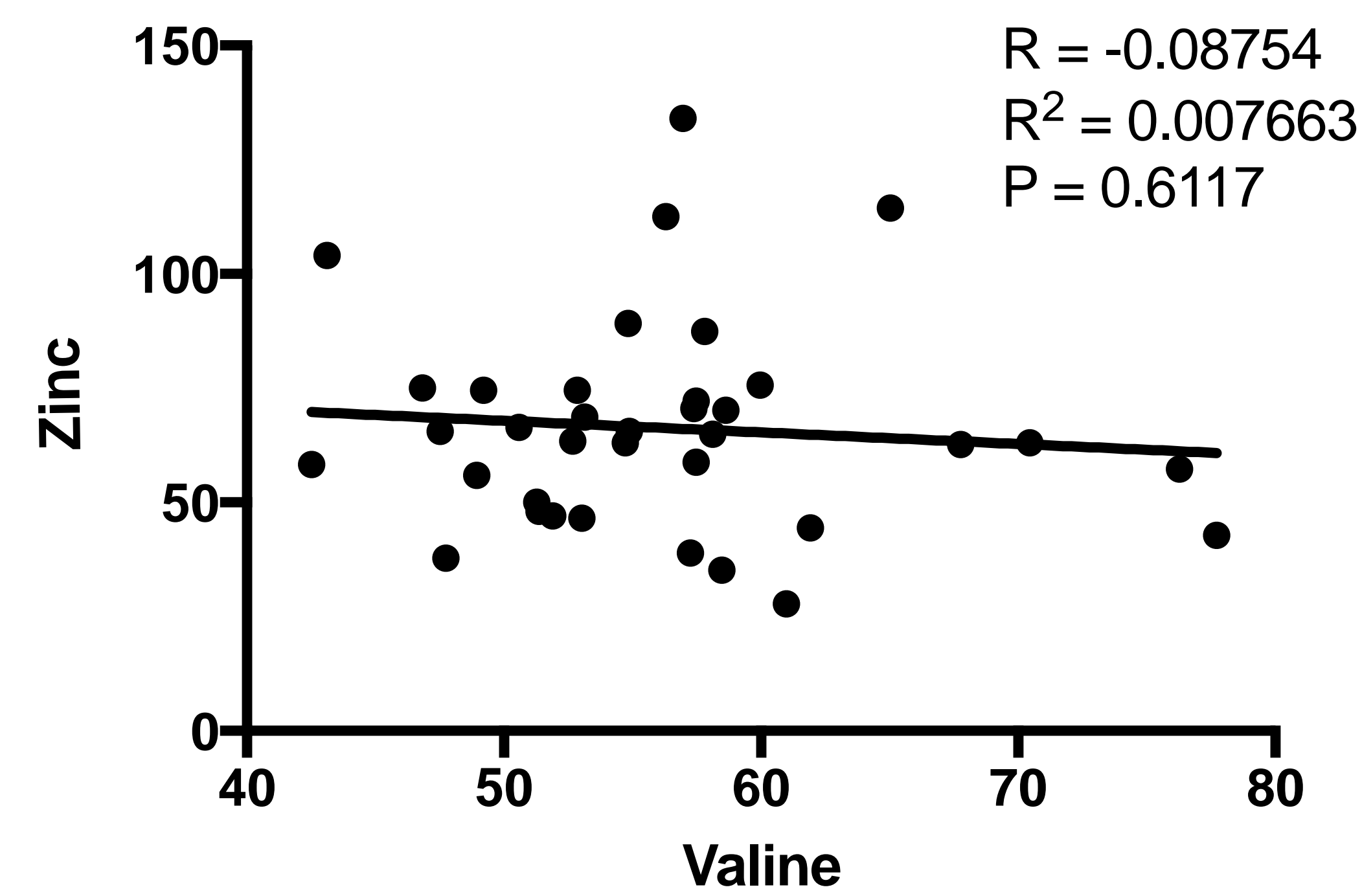
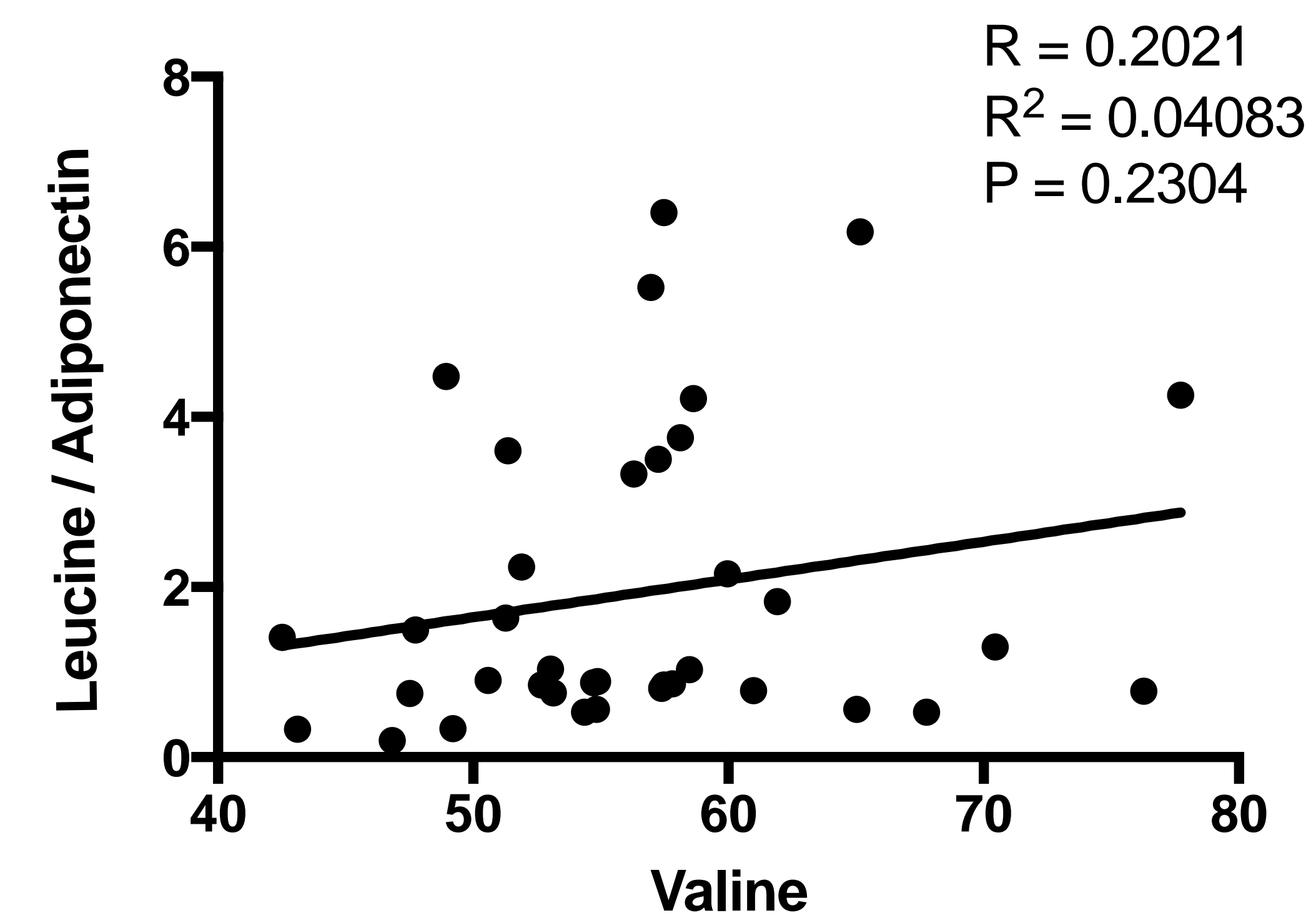
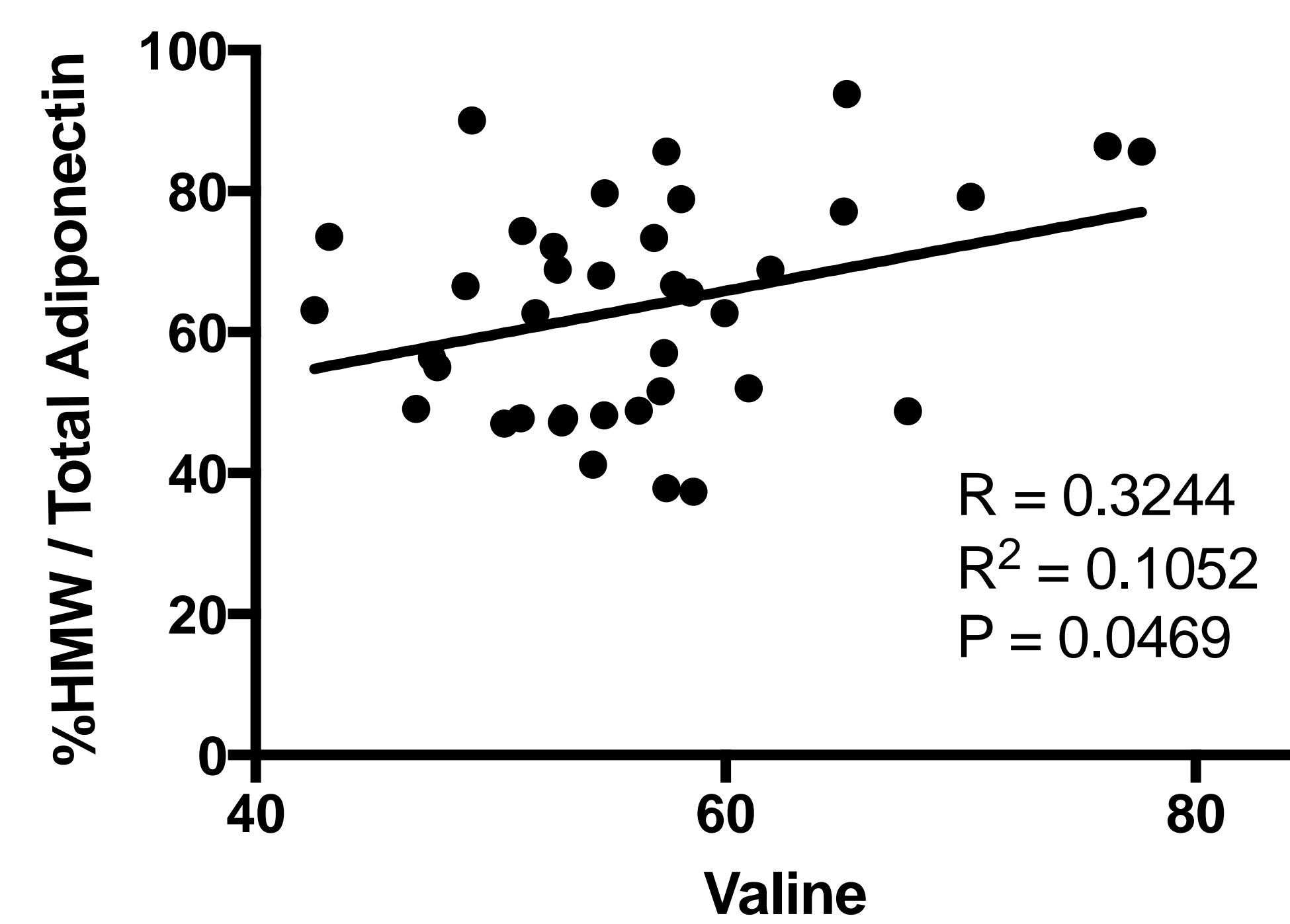
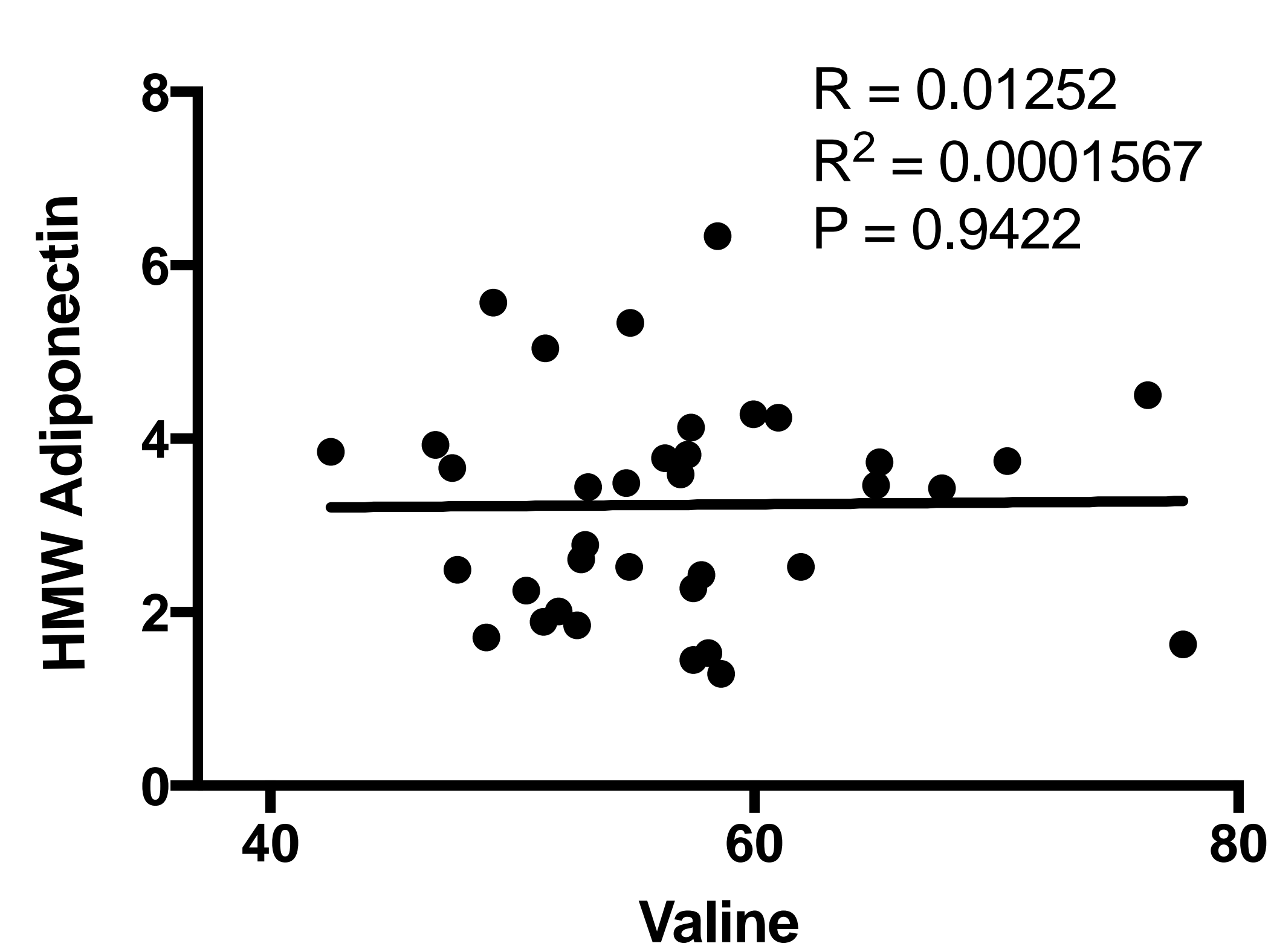
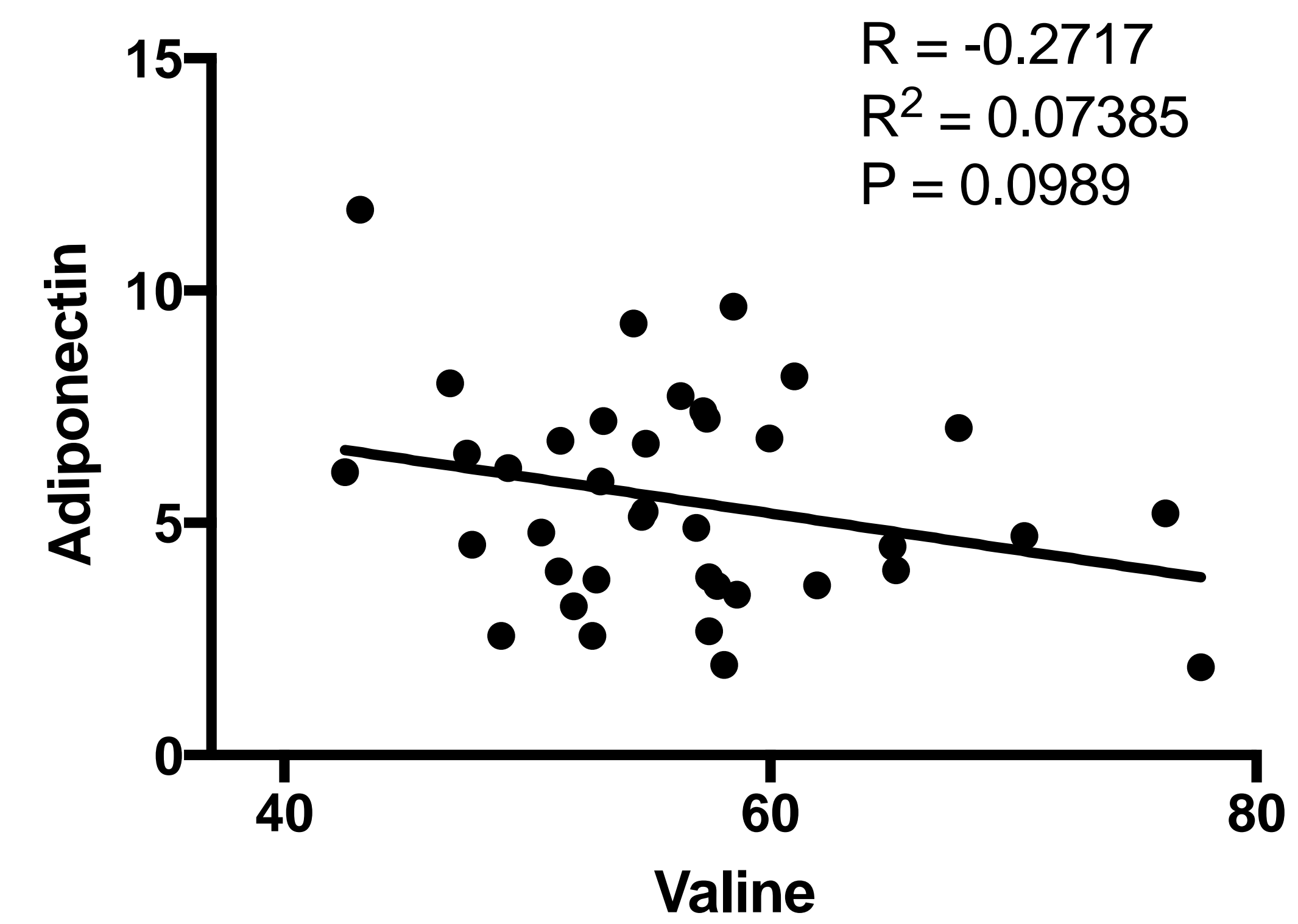
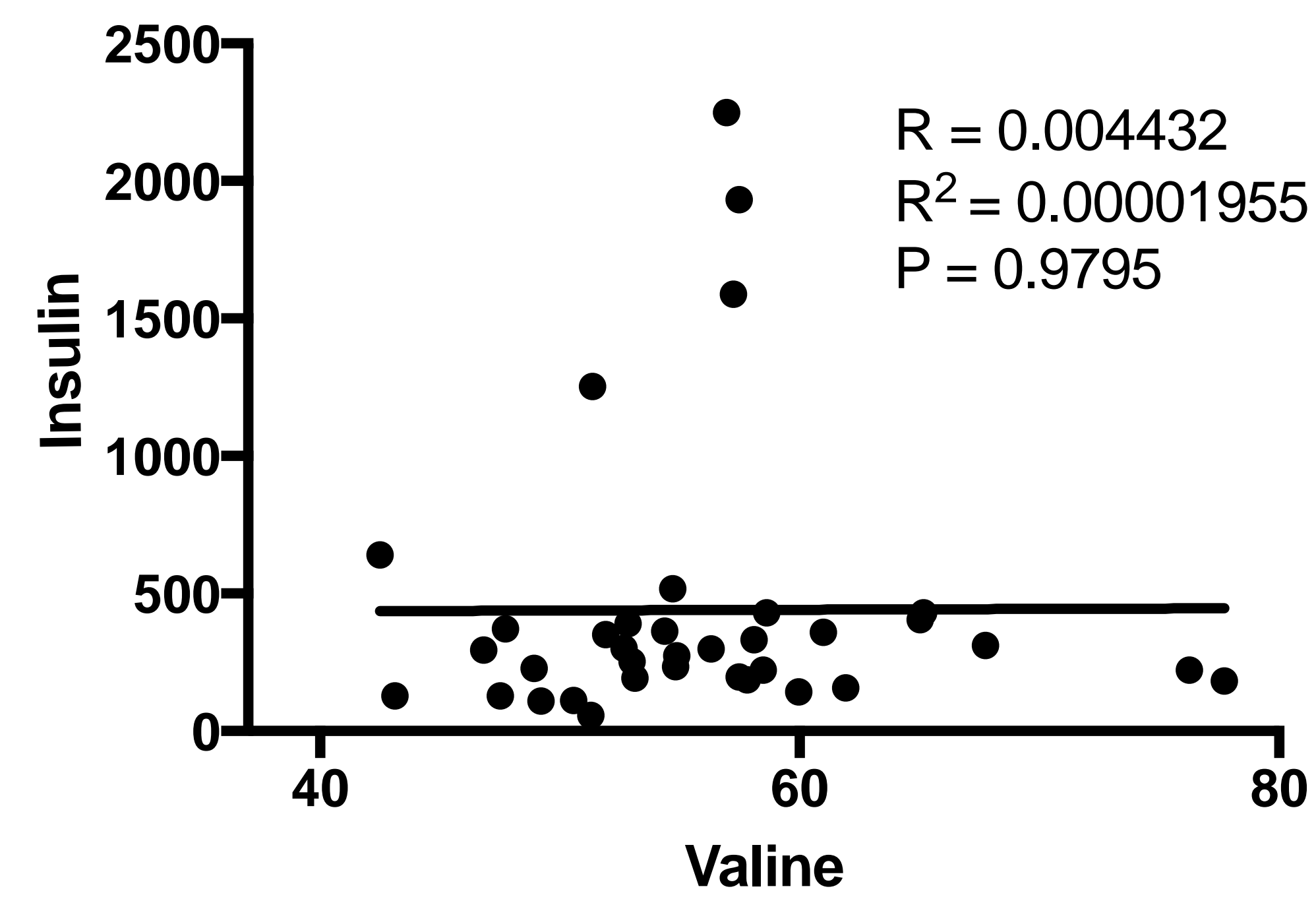
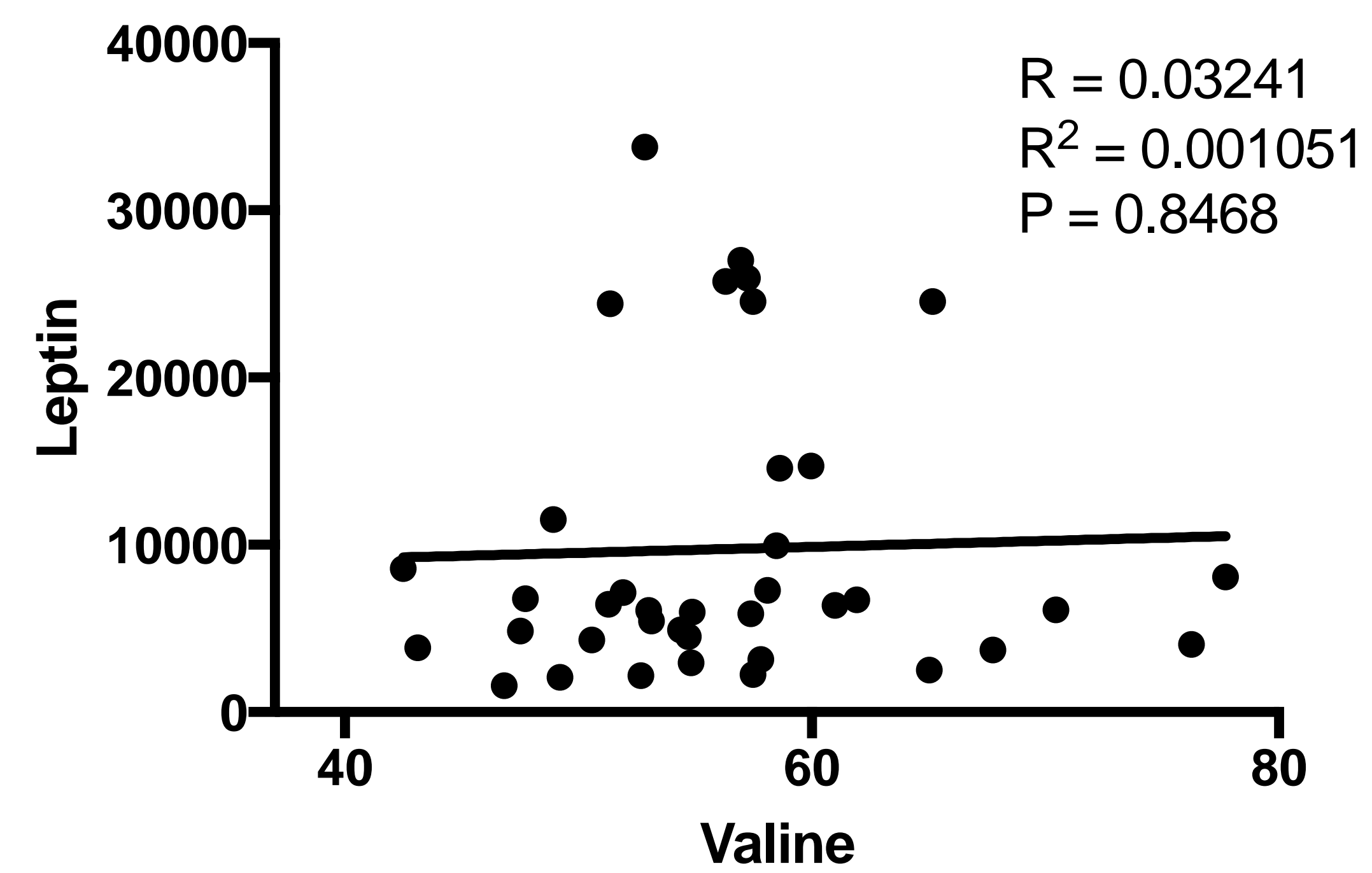
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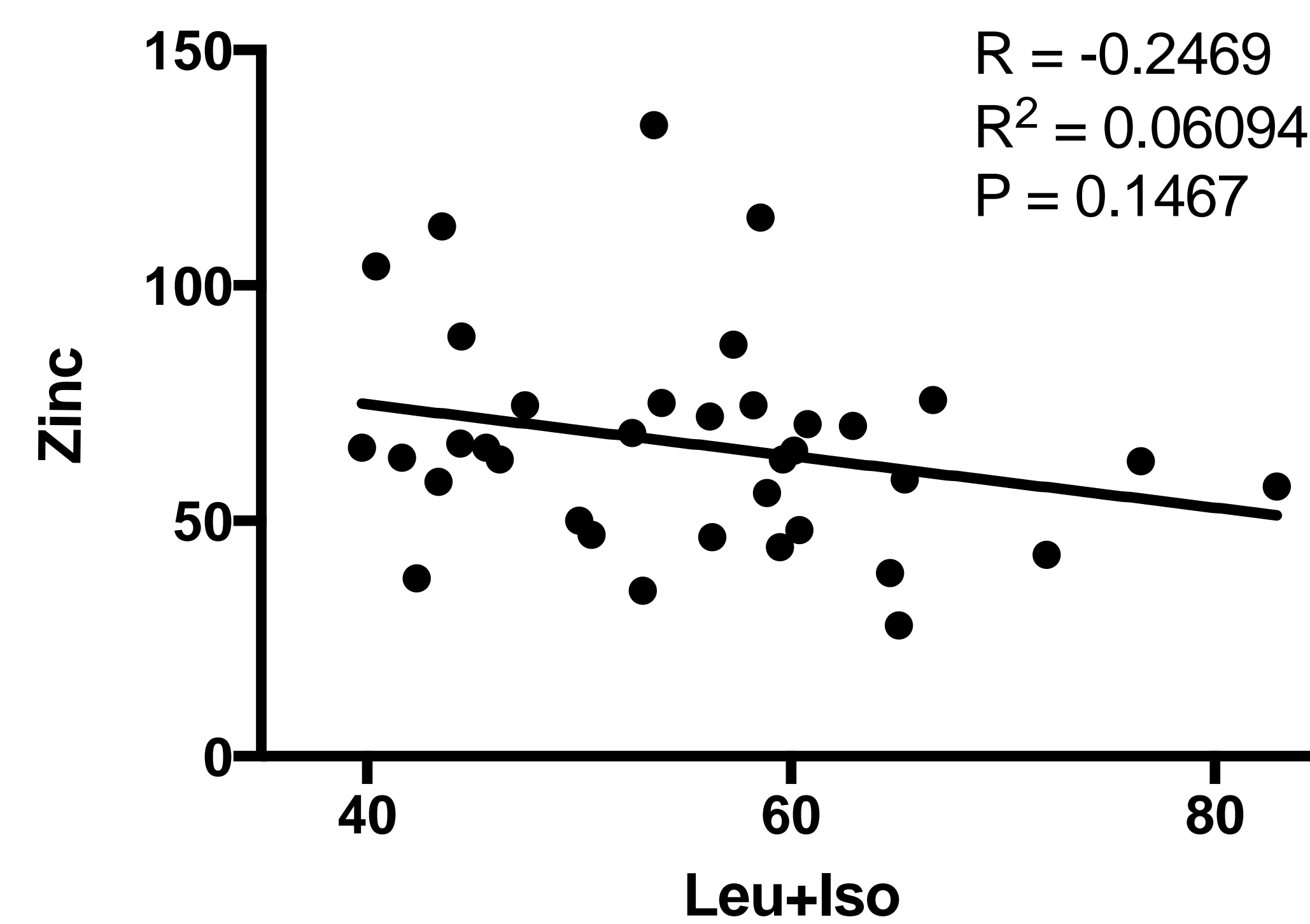
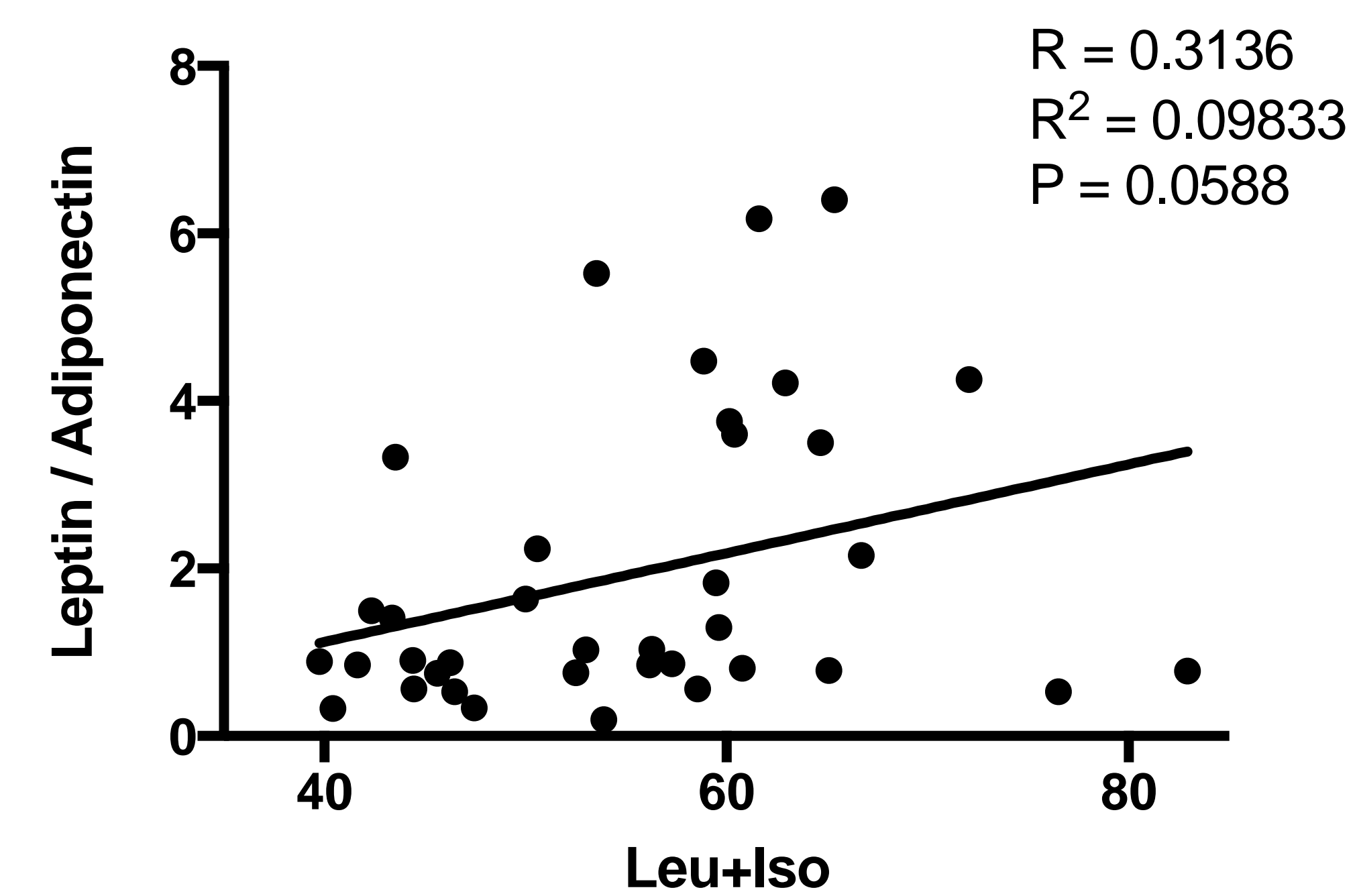
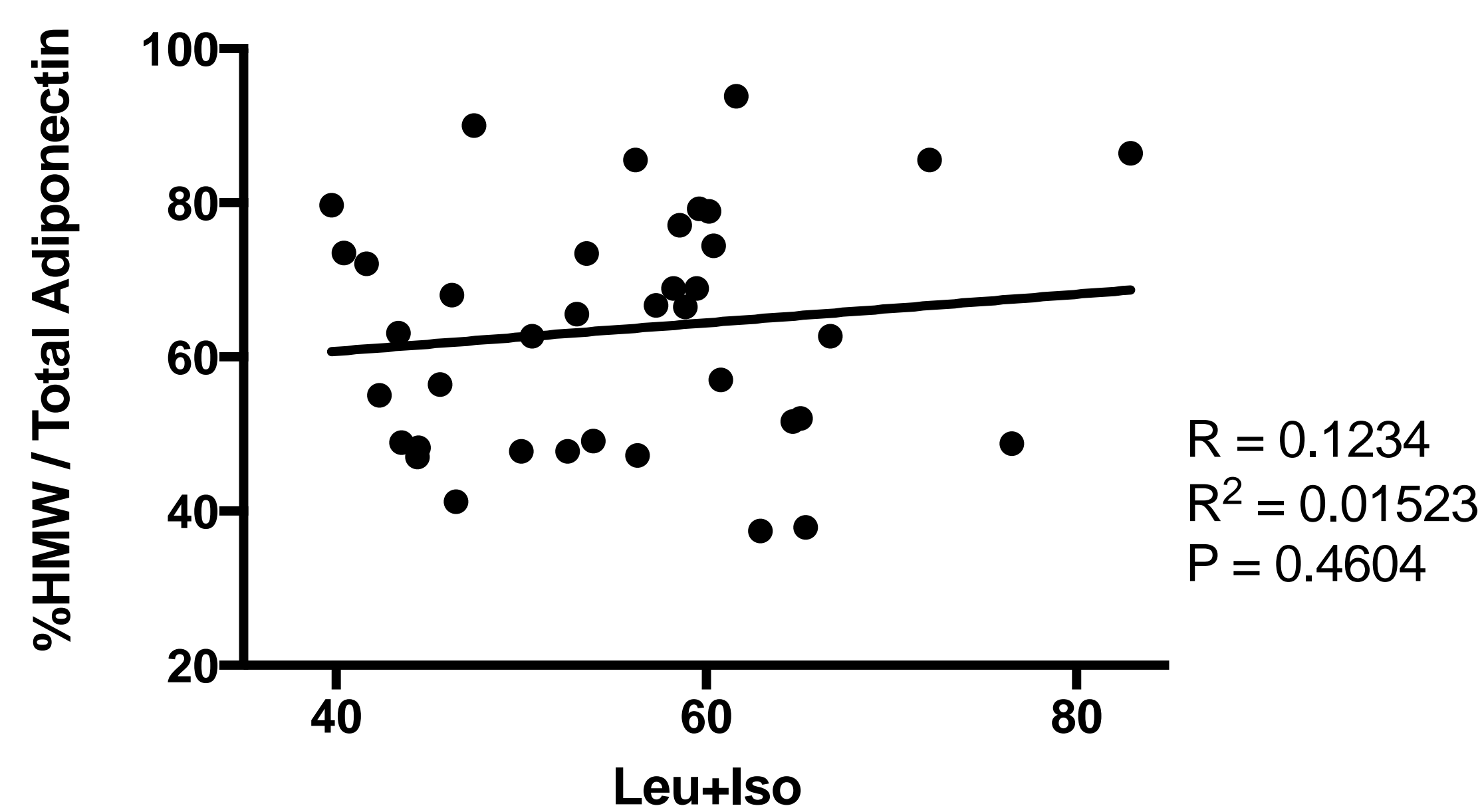
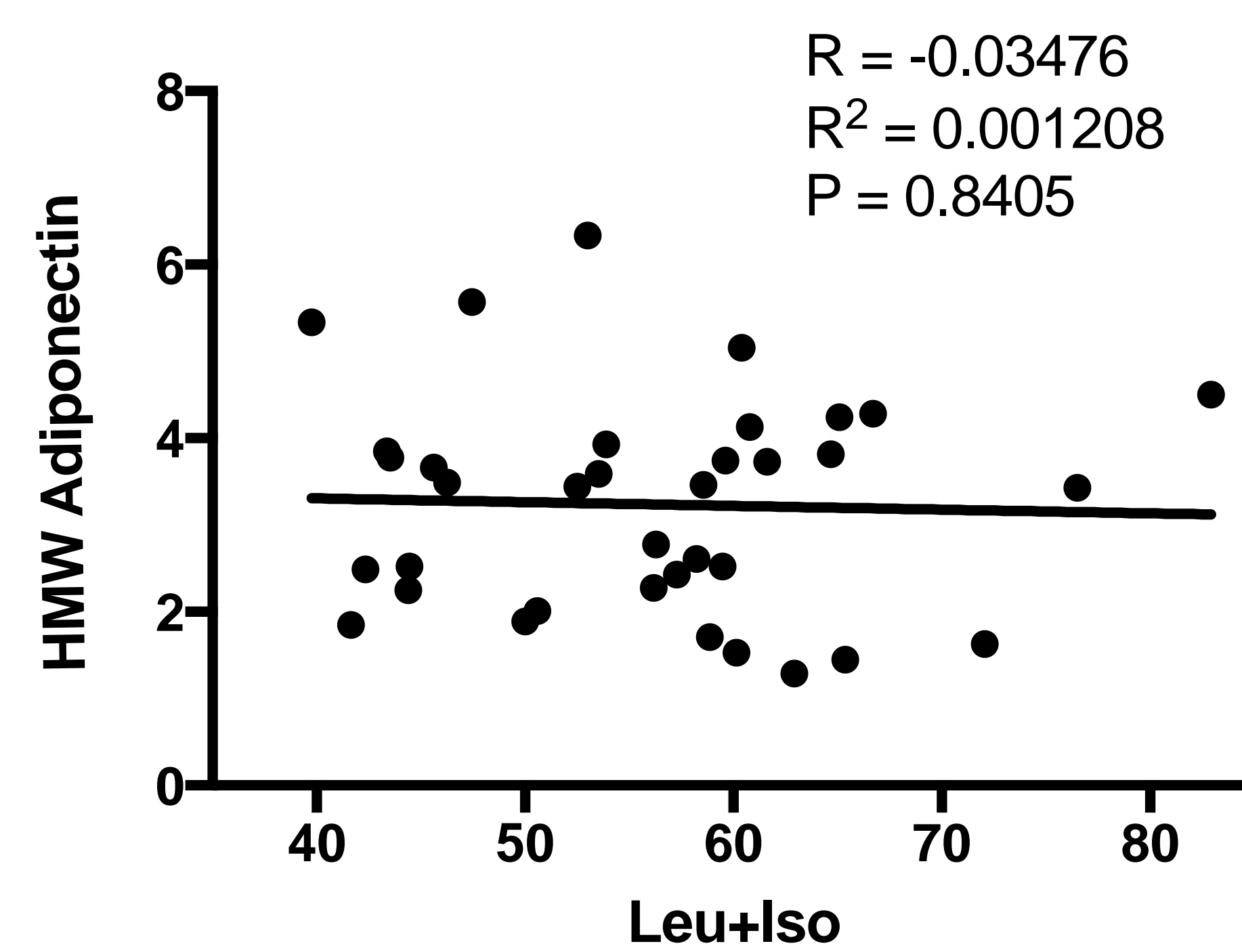
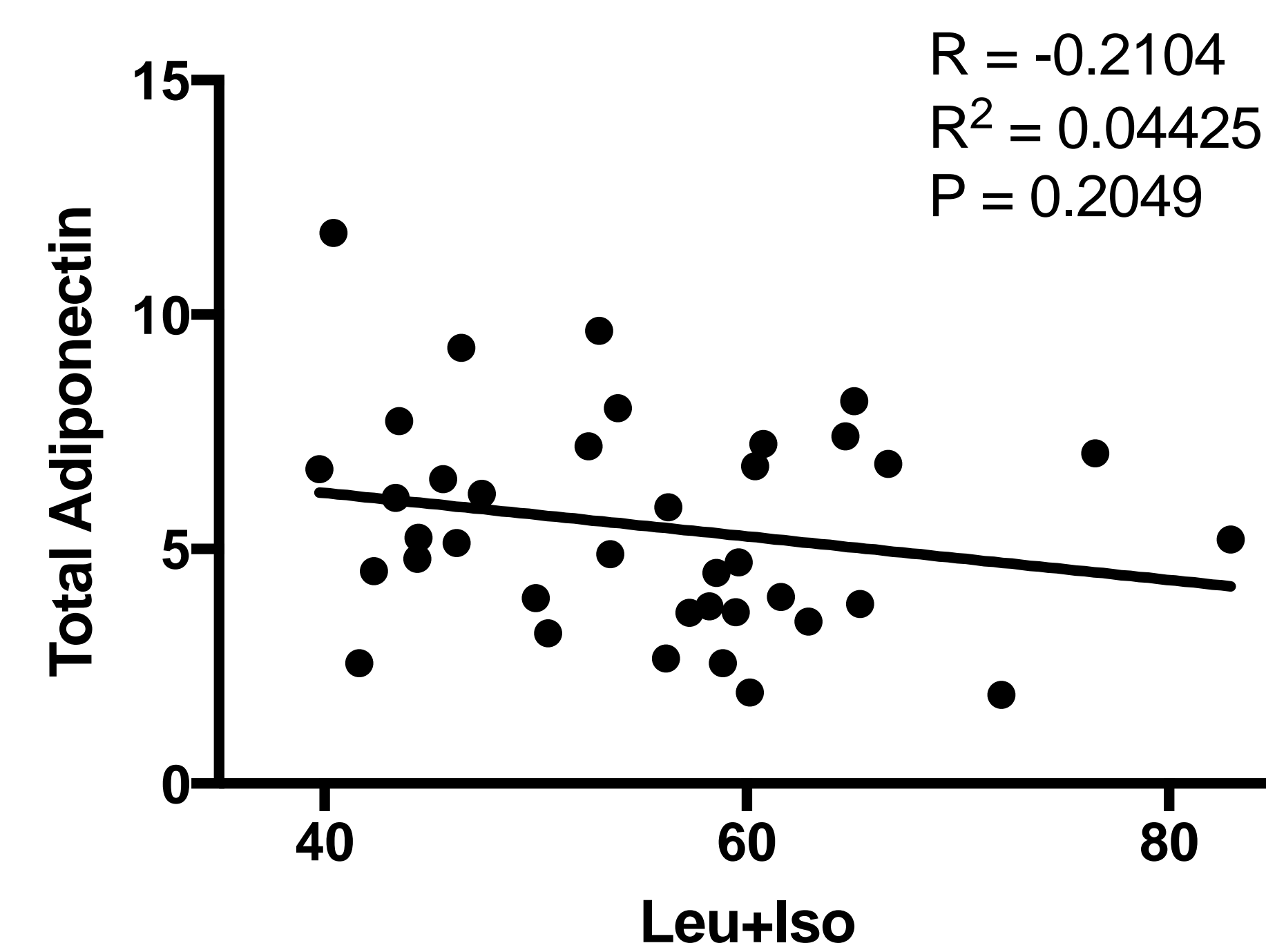
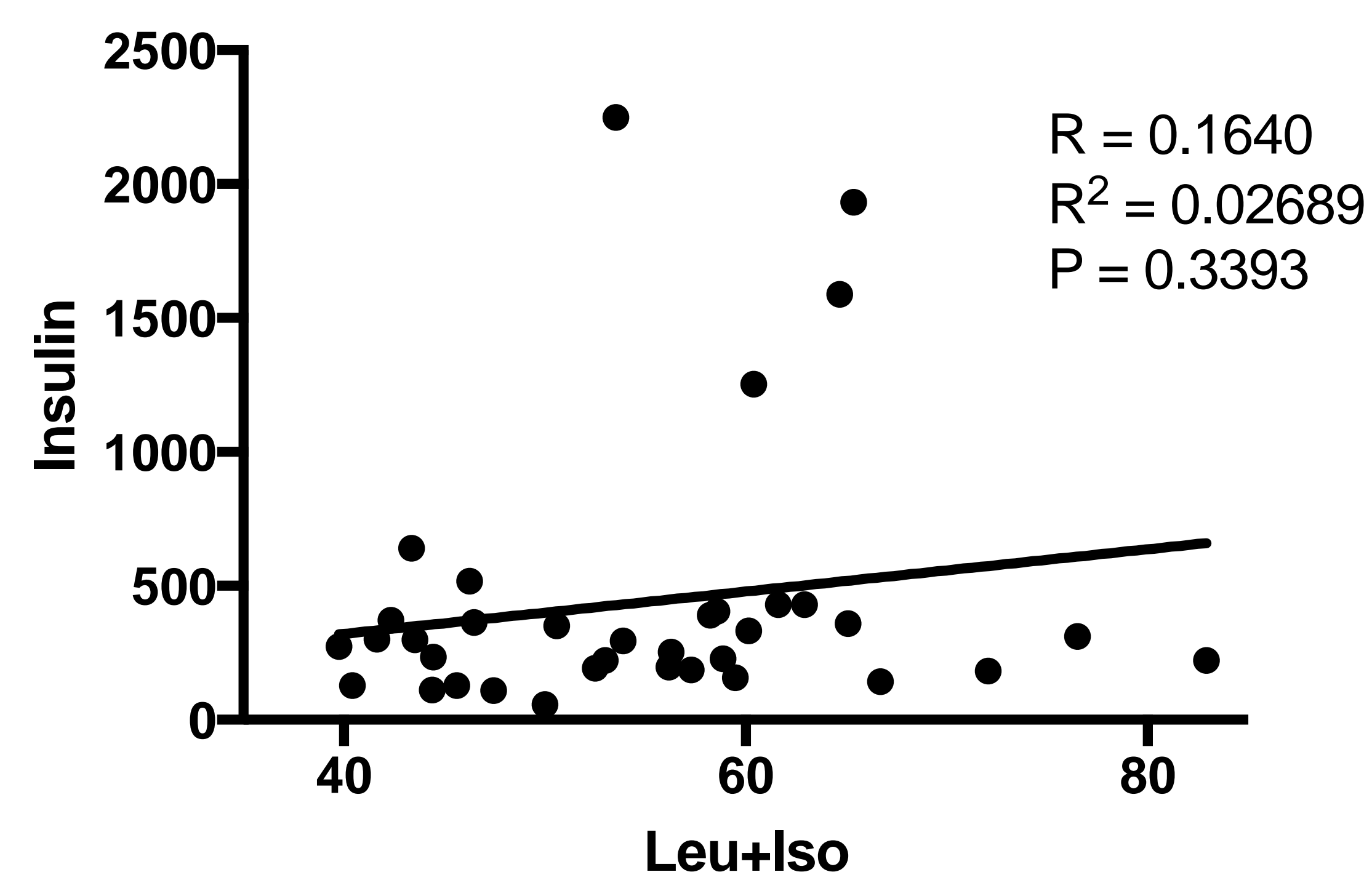
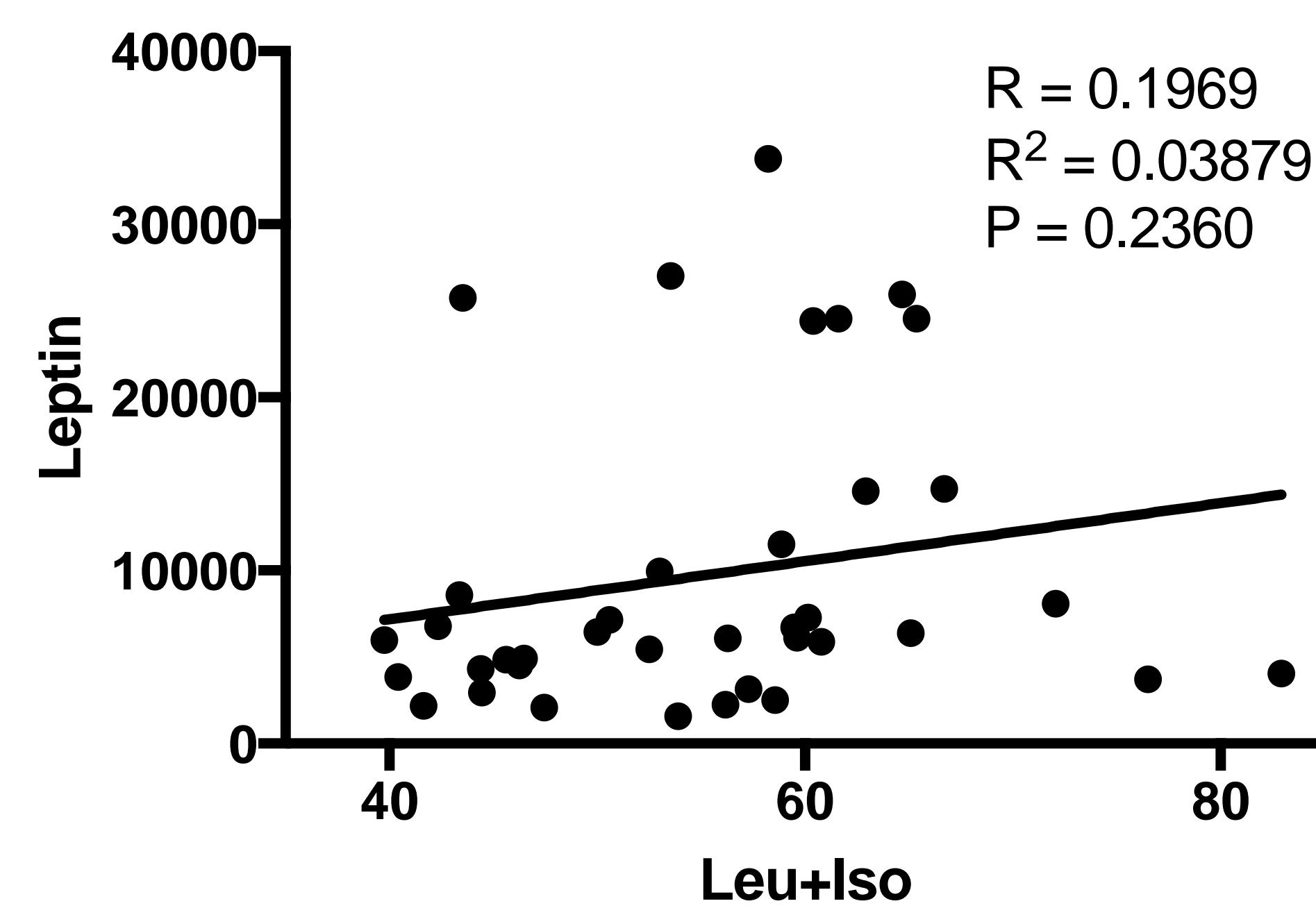


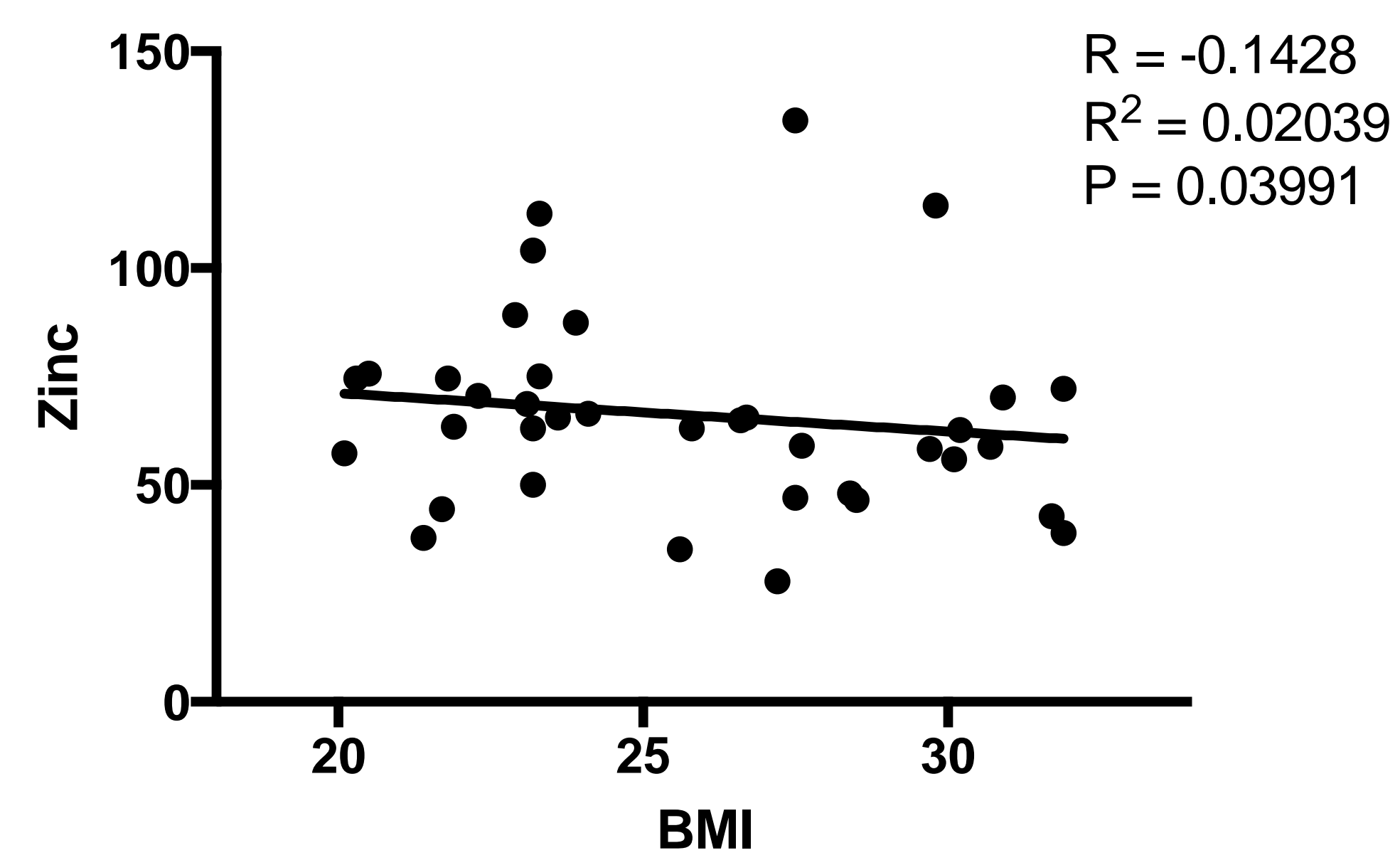
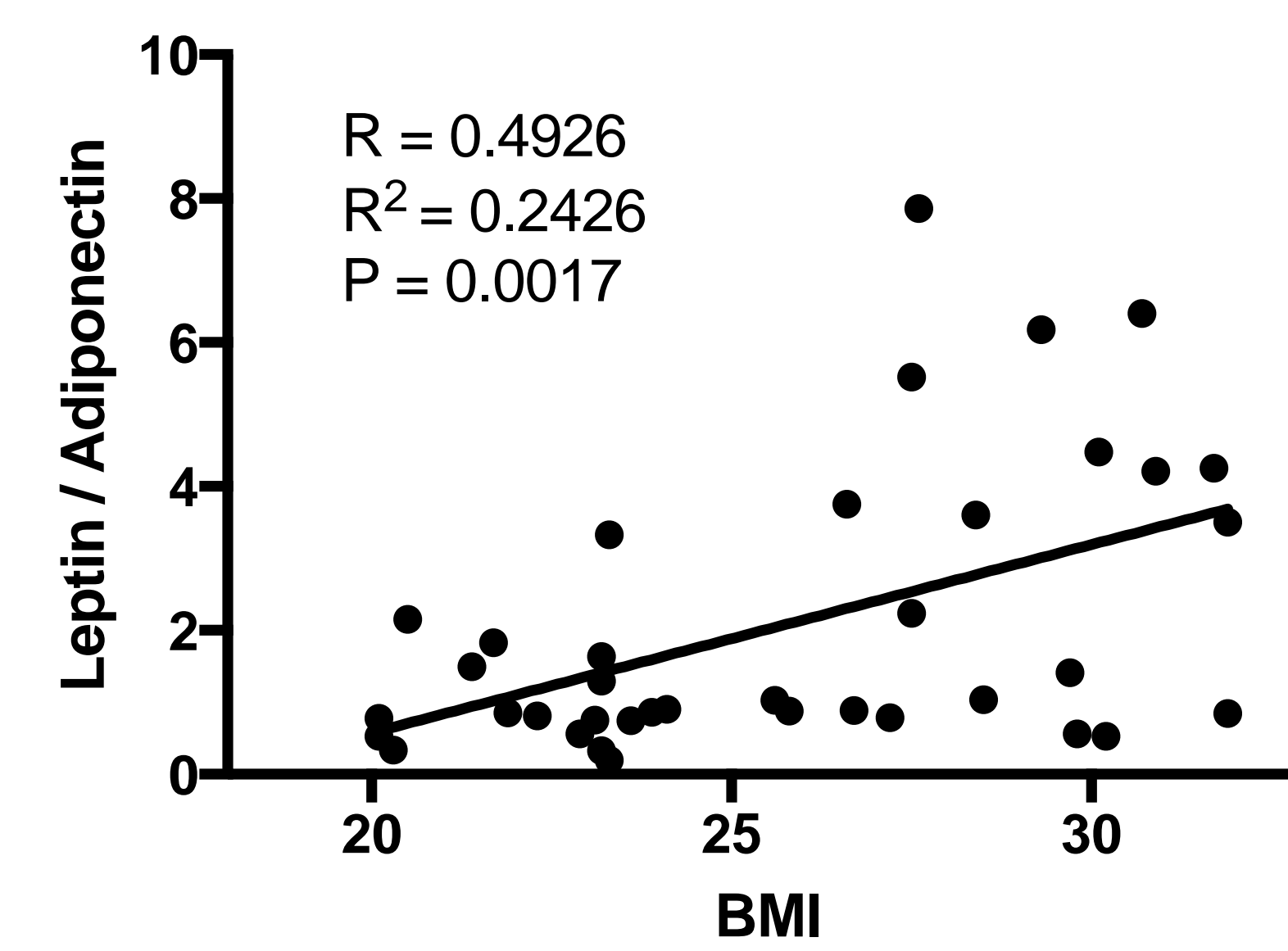
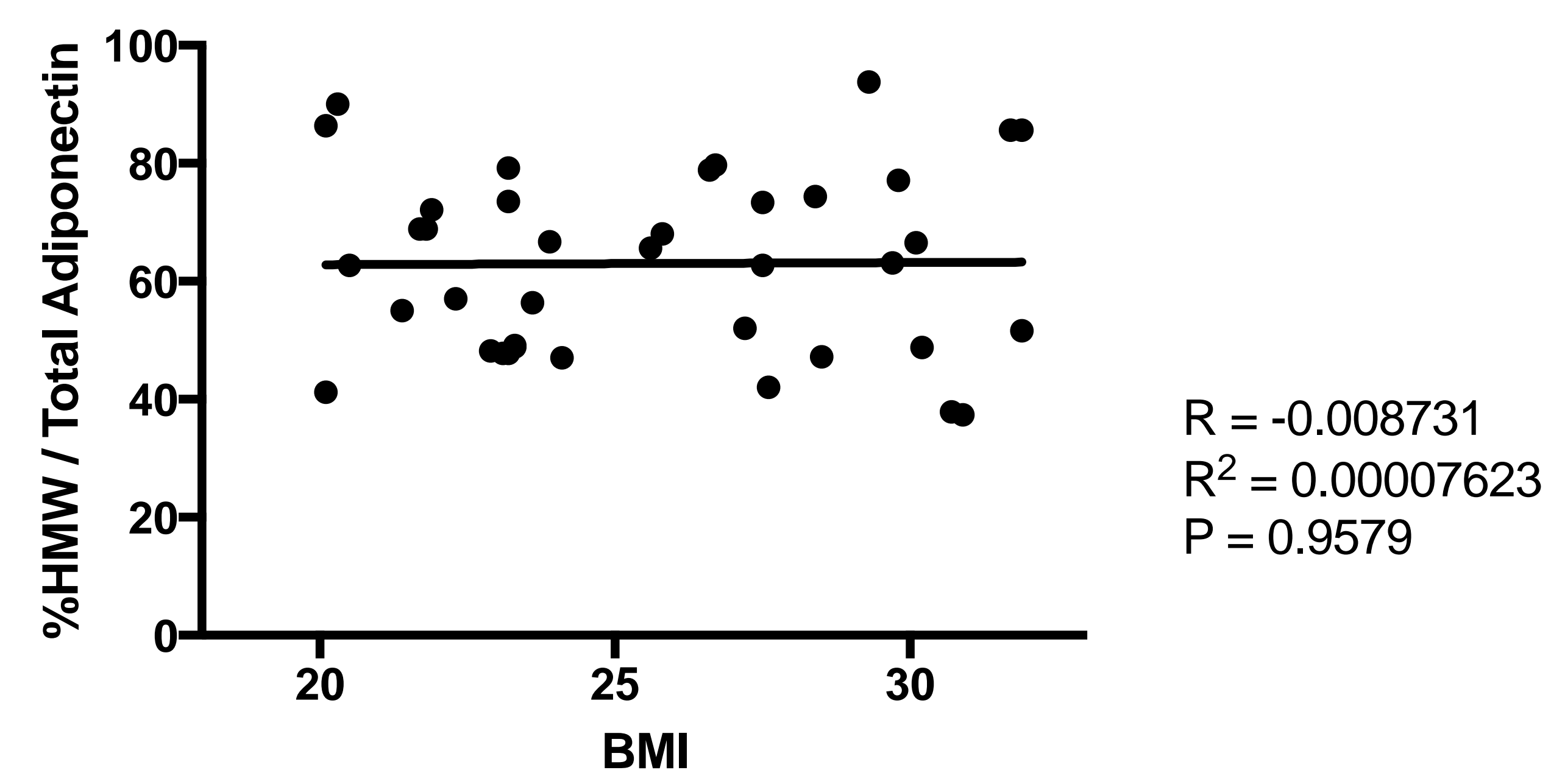
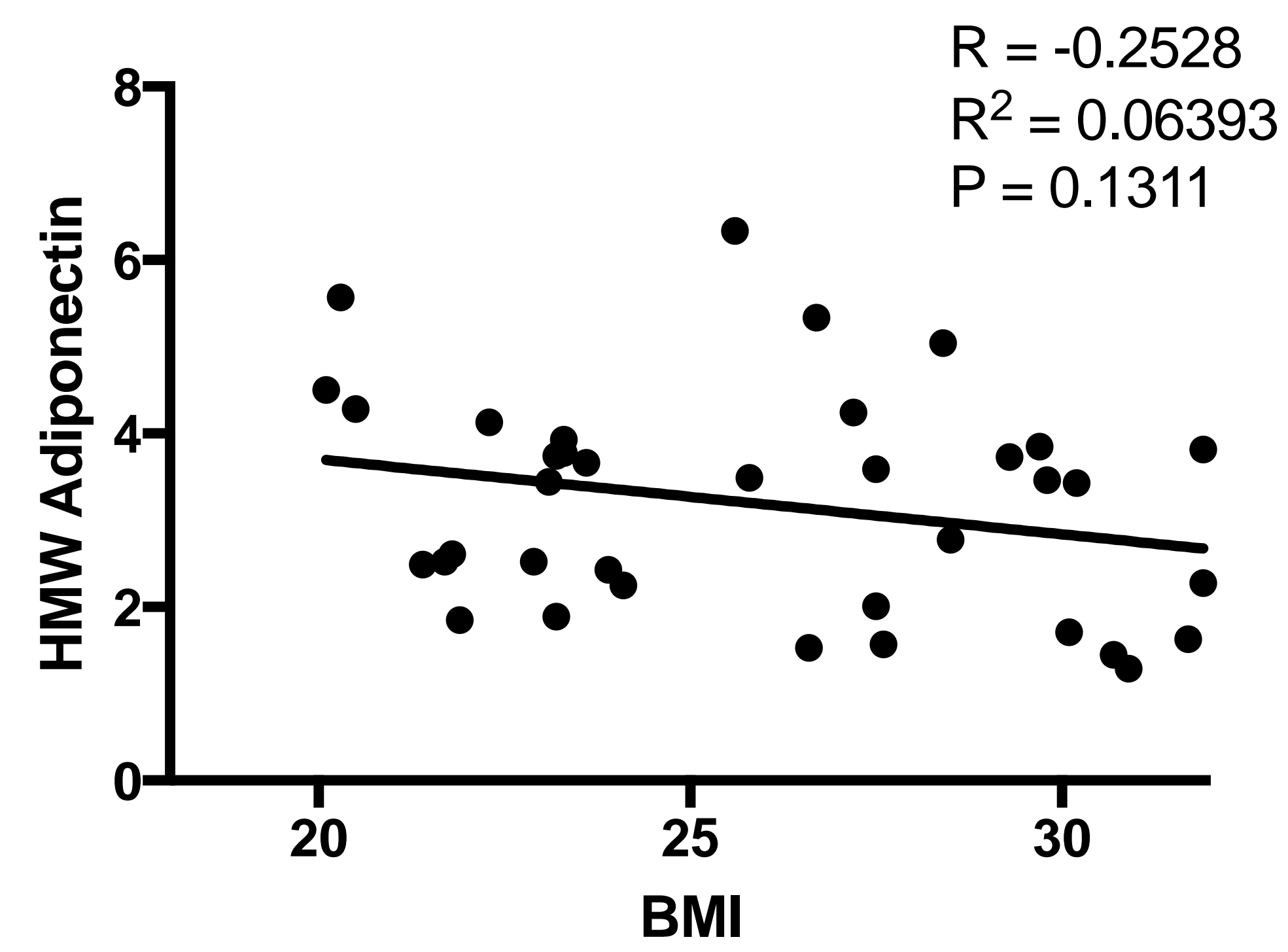
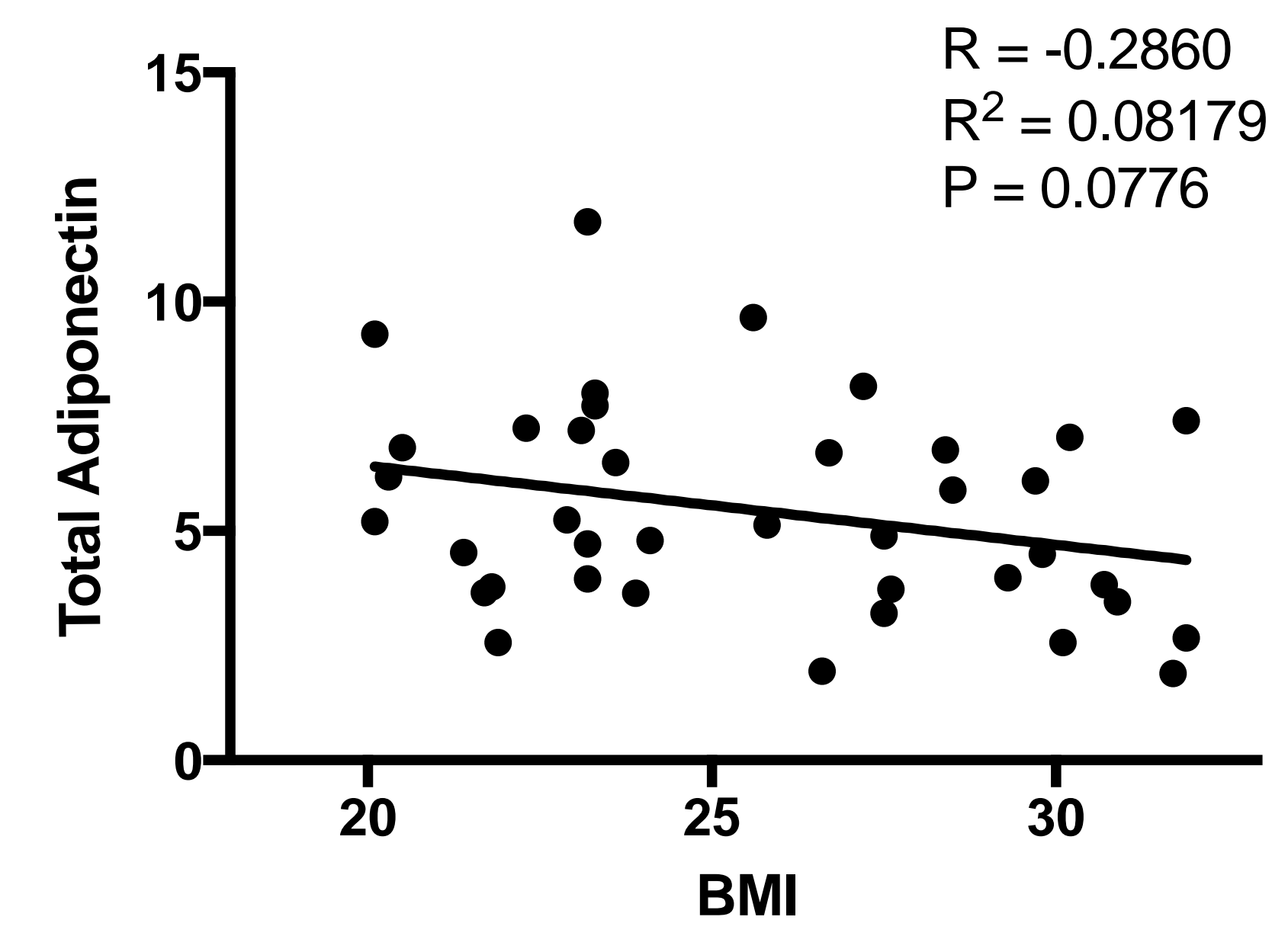
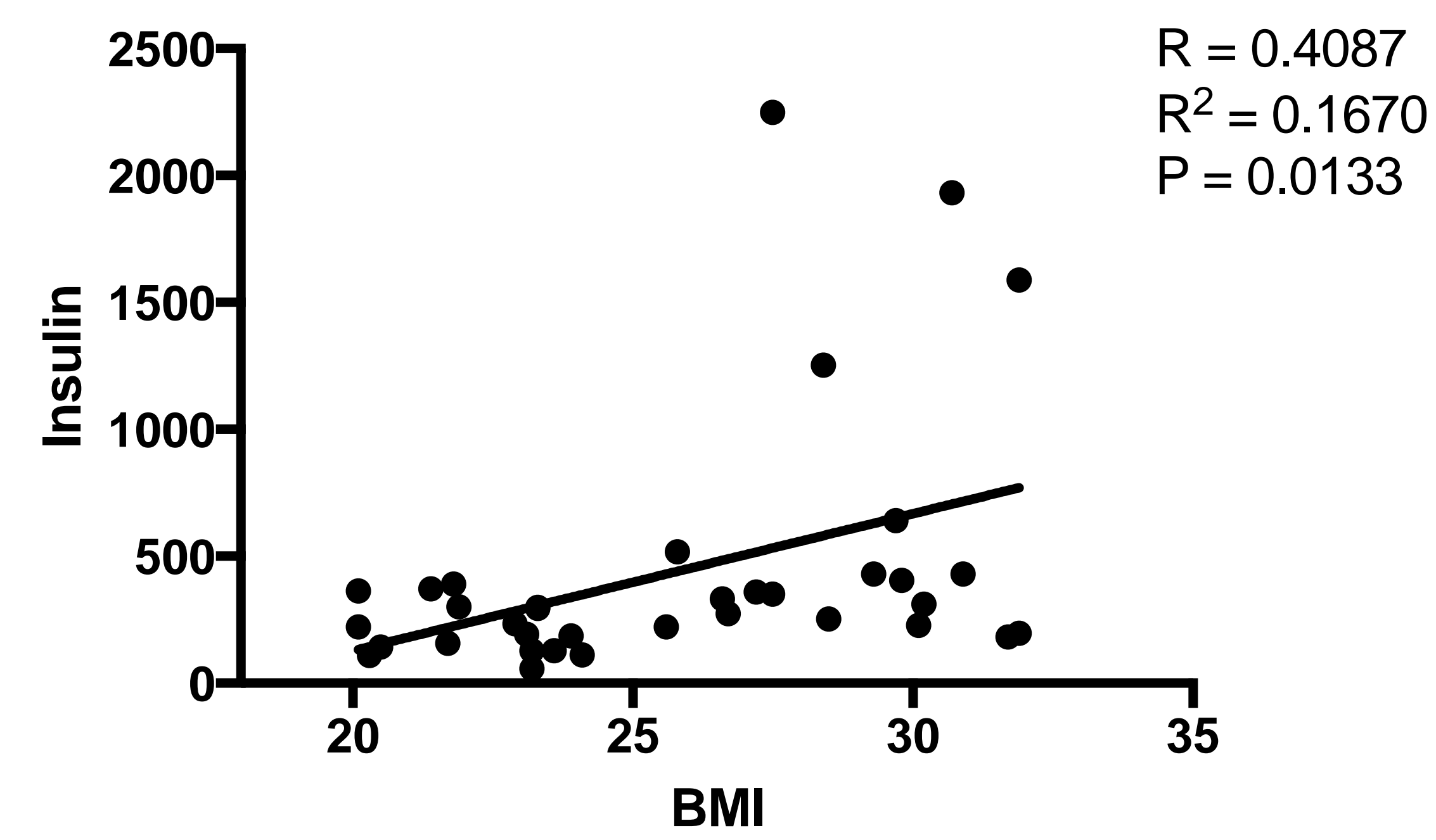
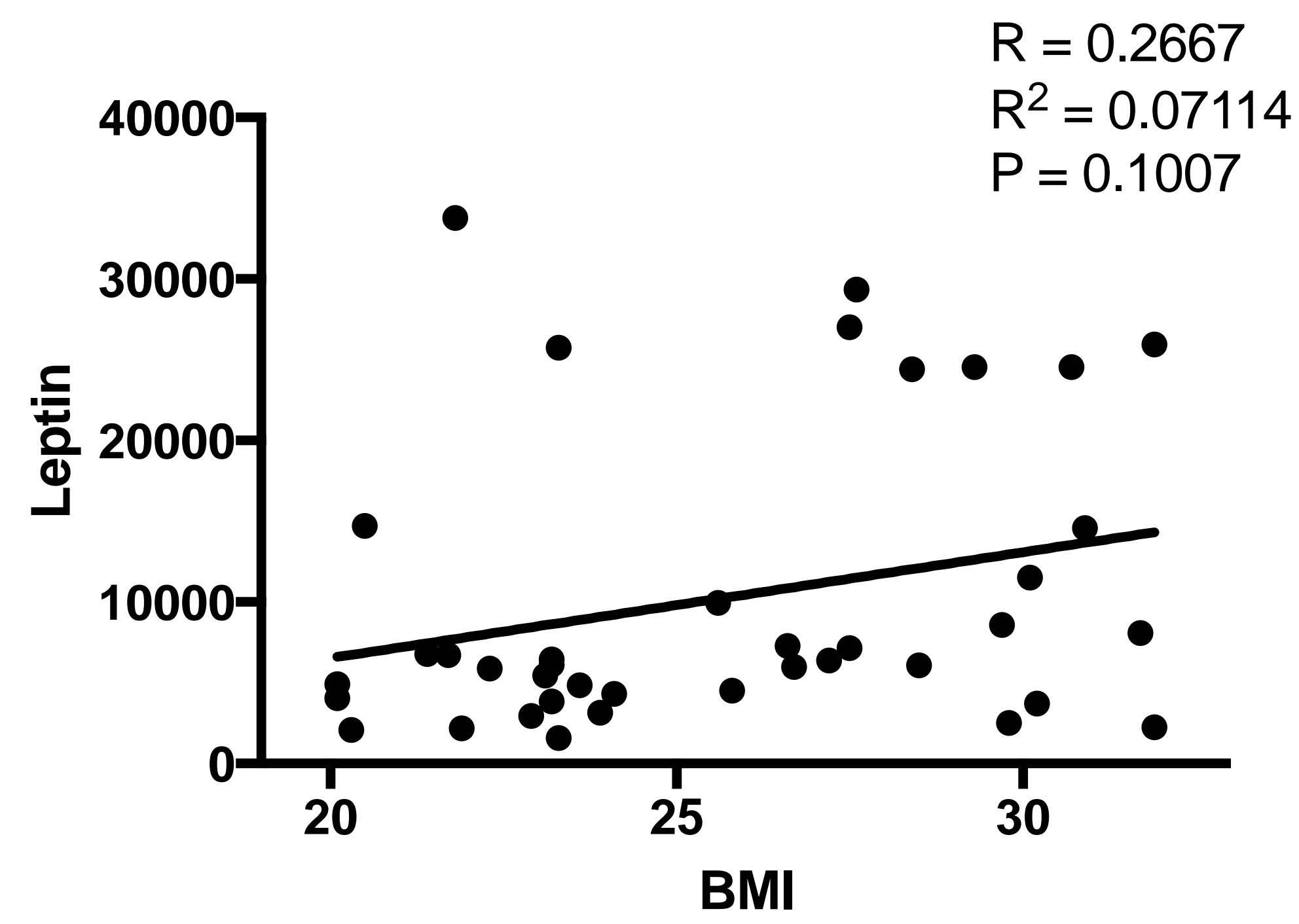
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12 week data

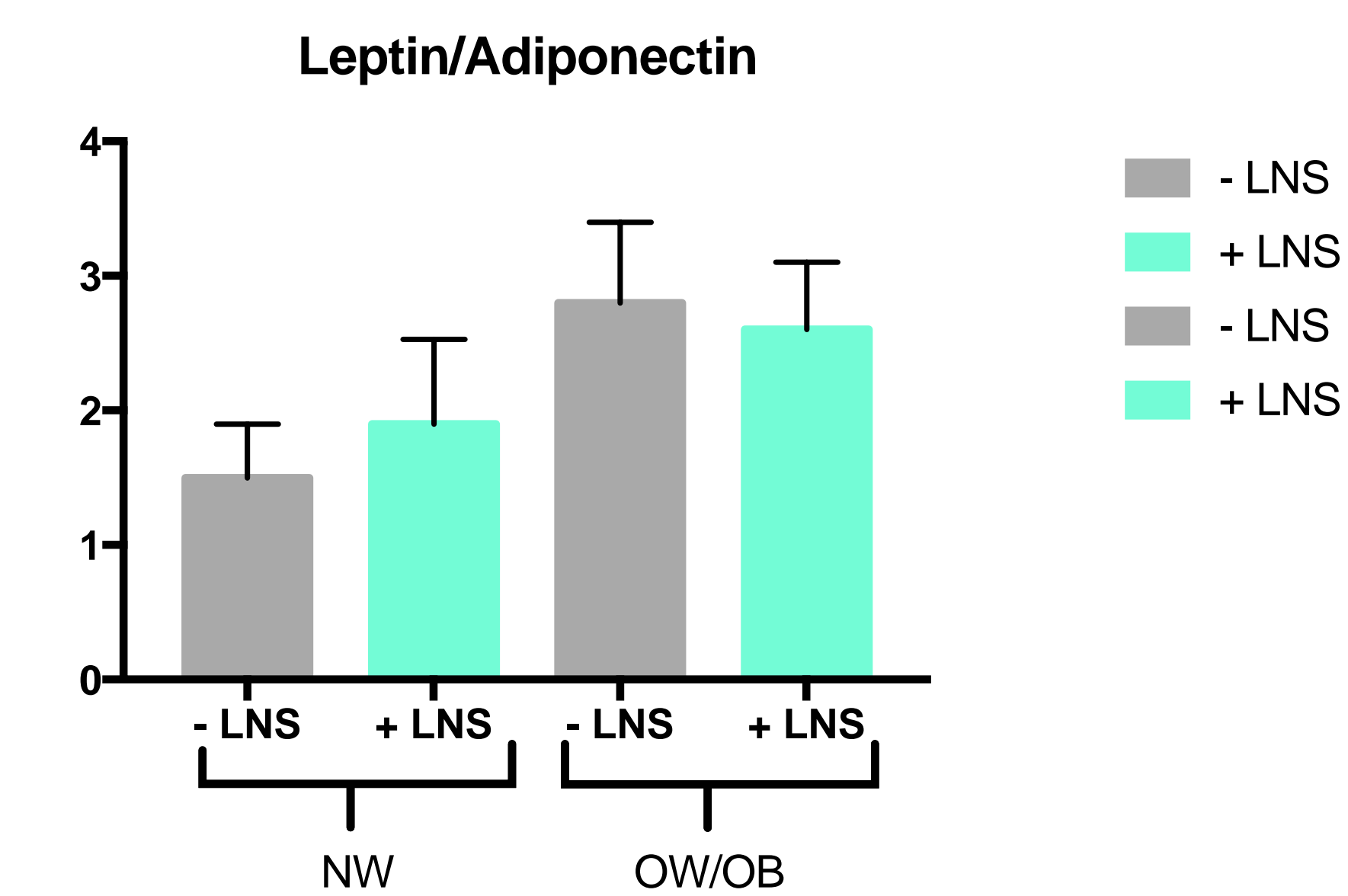
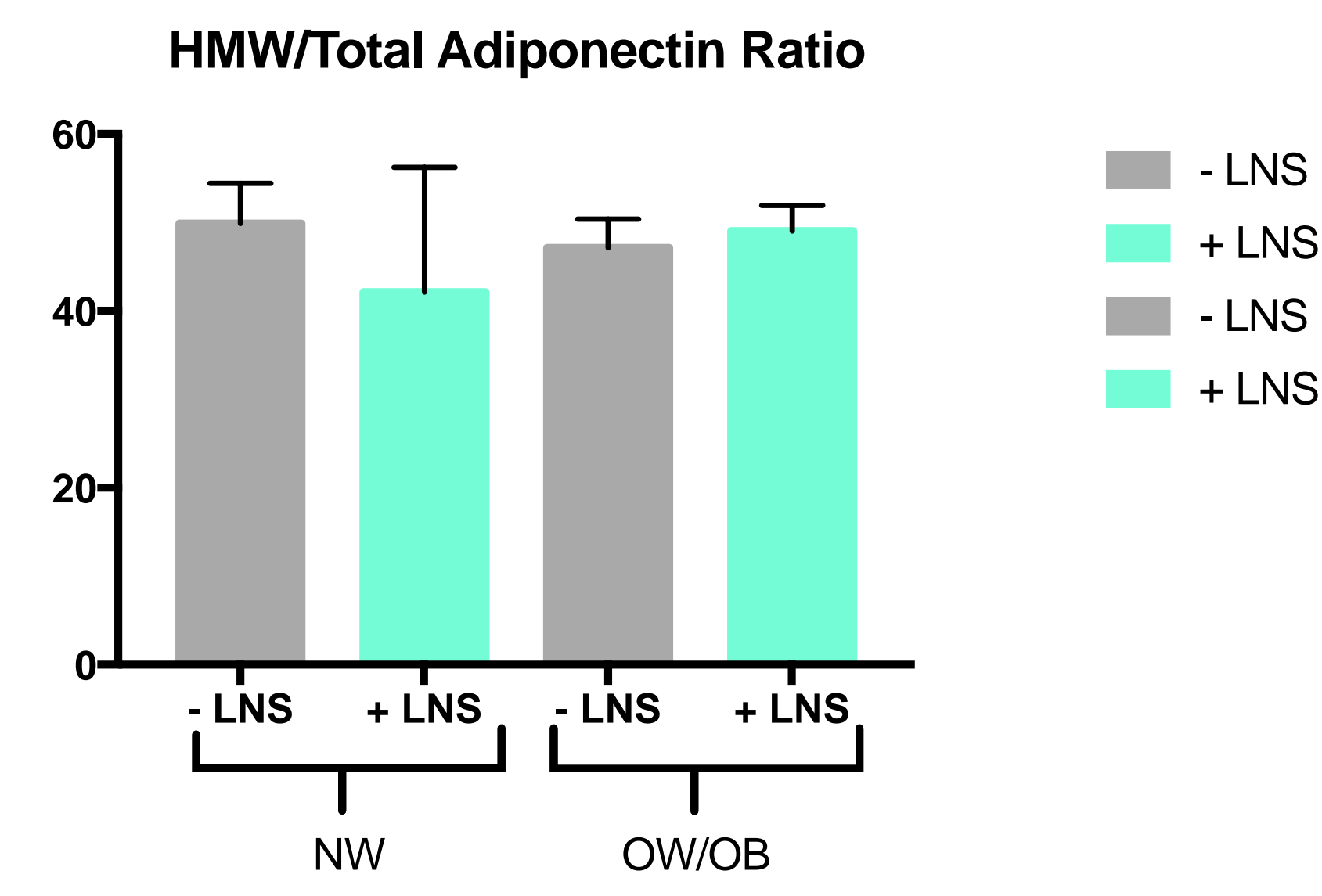
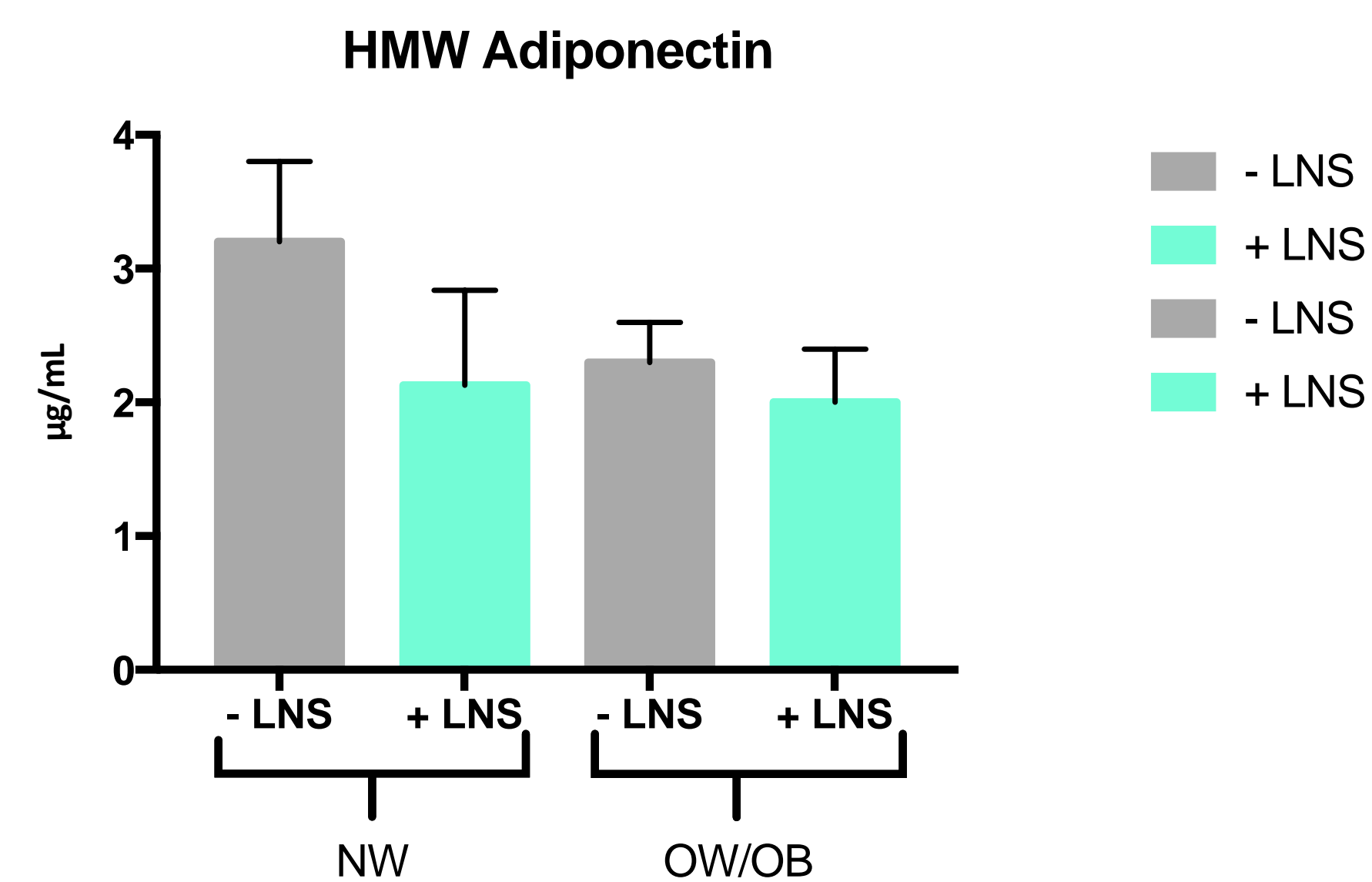
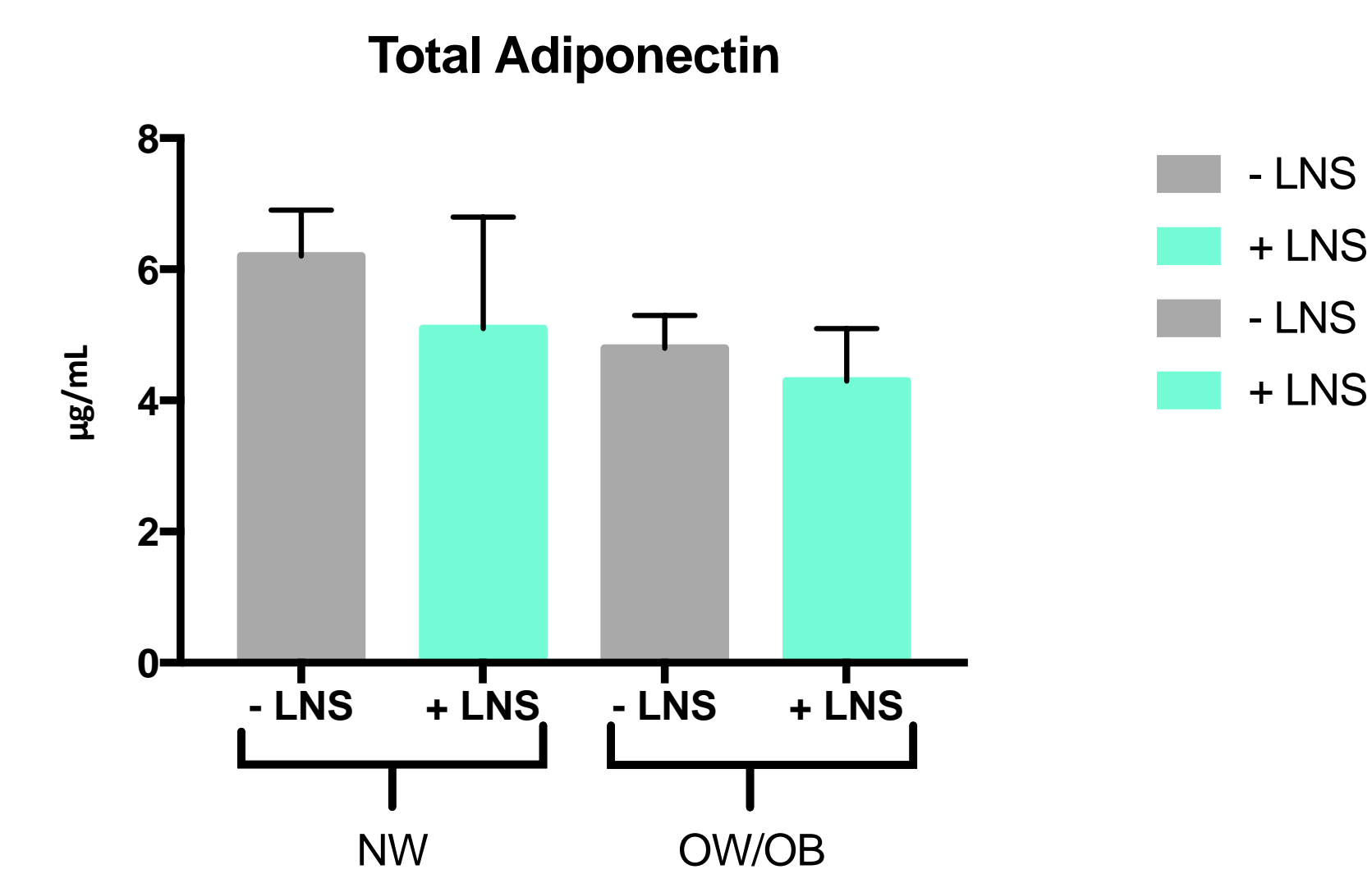
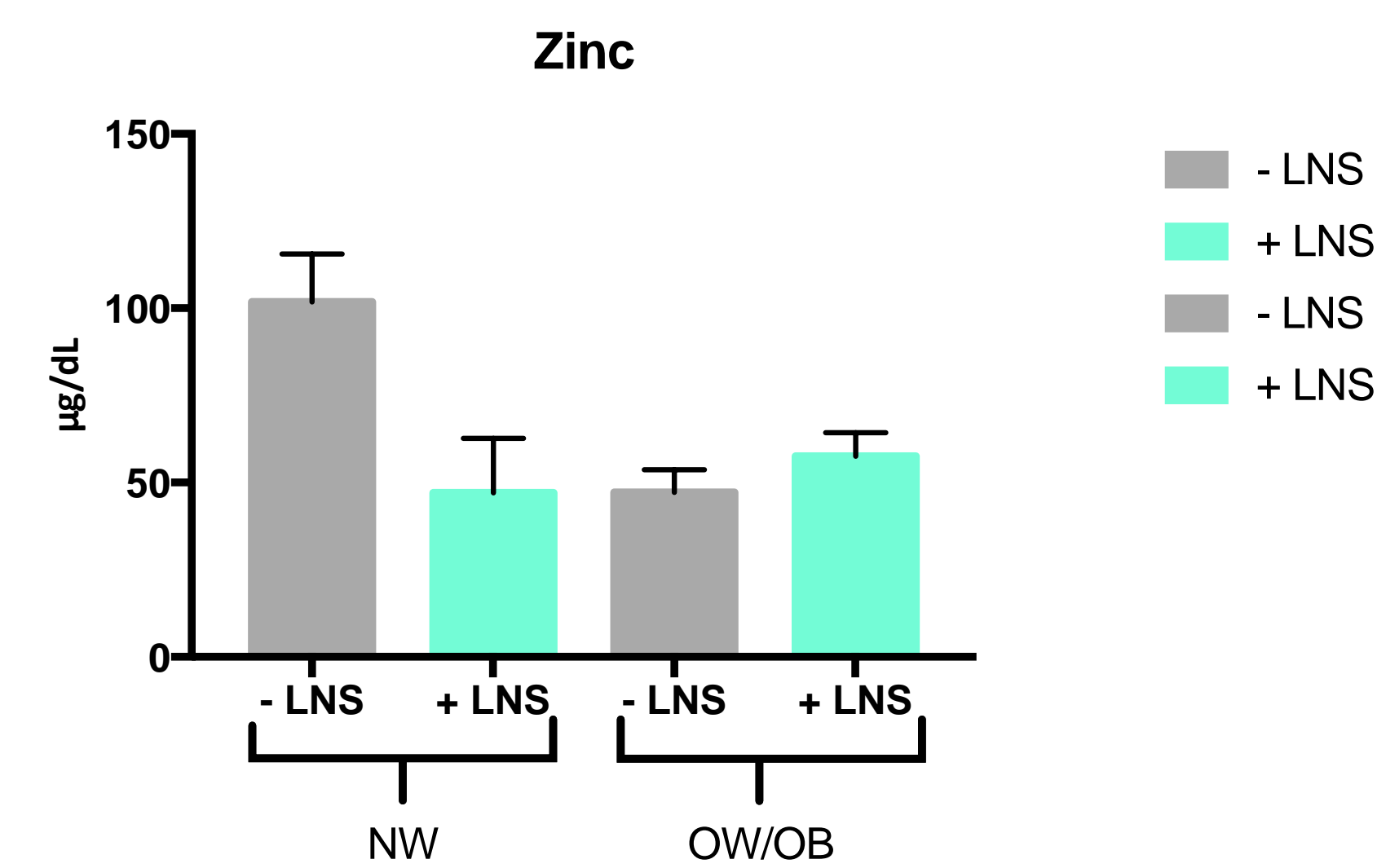
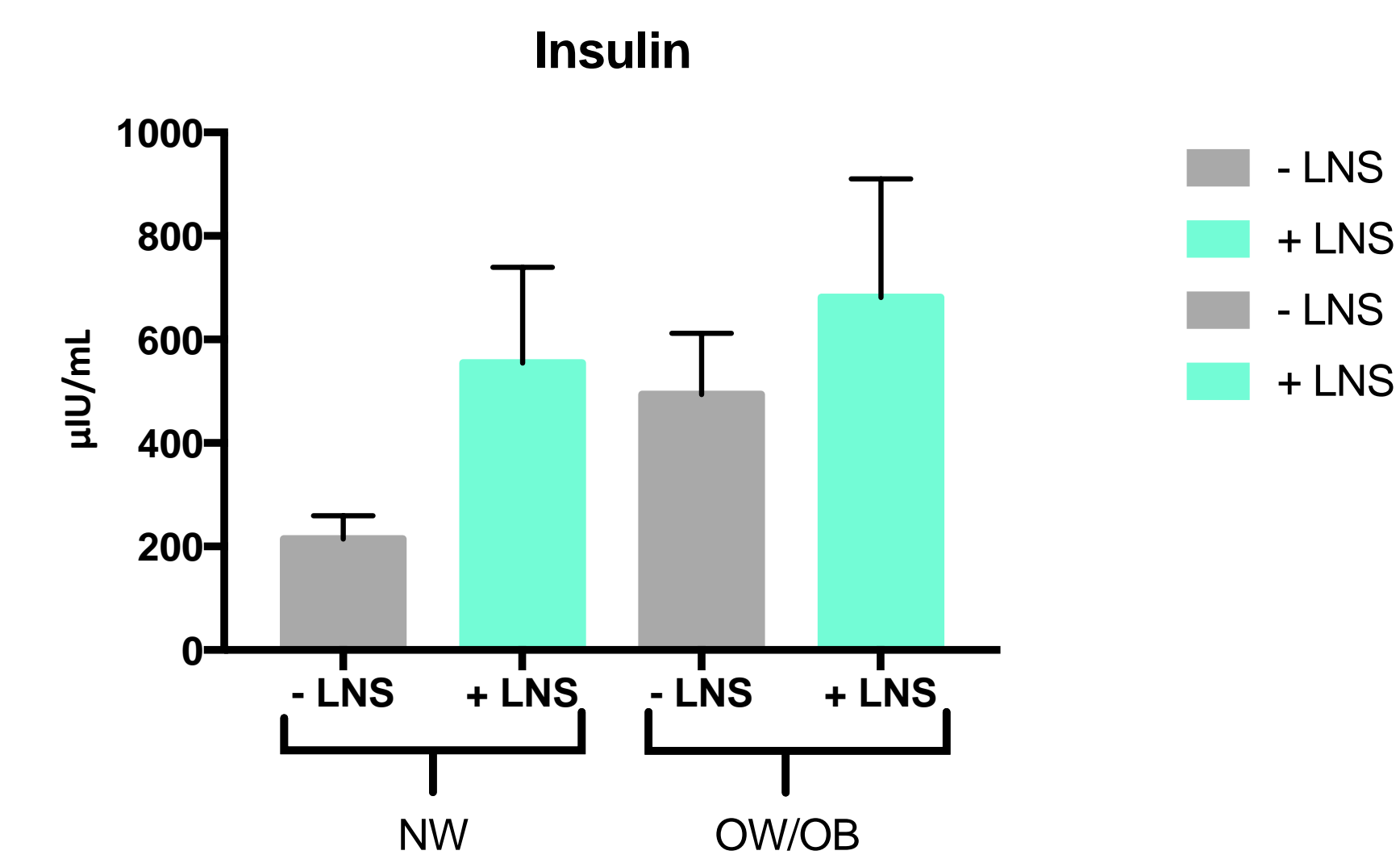
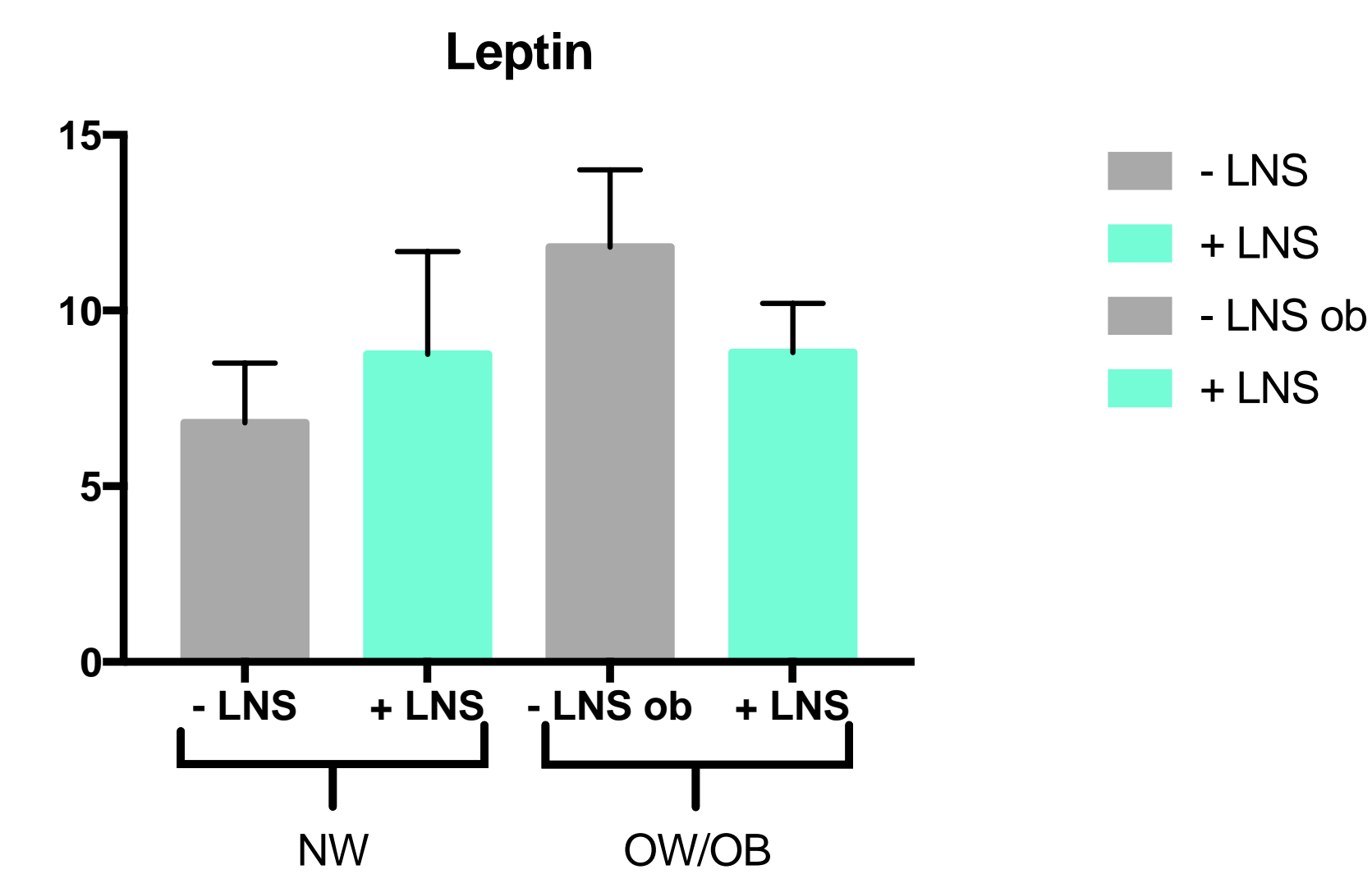


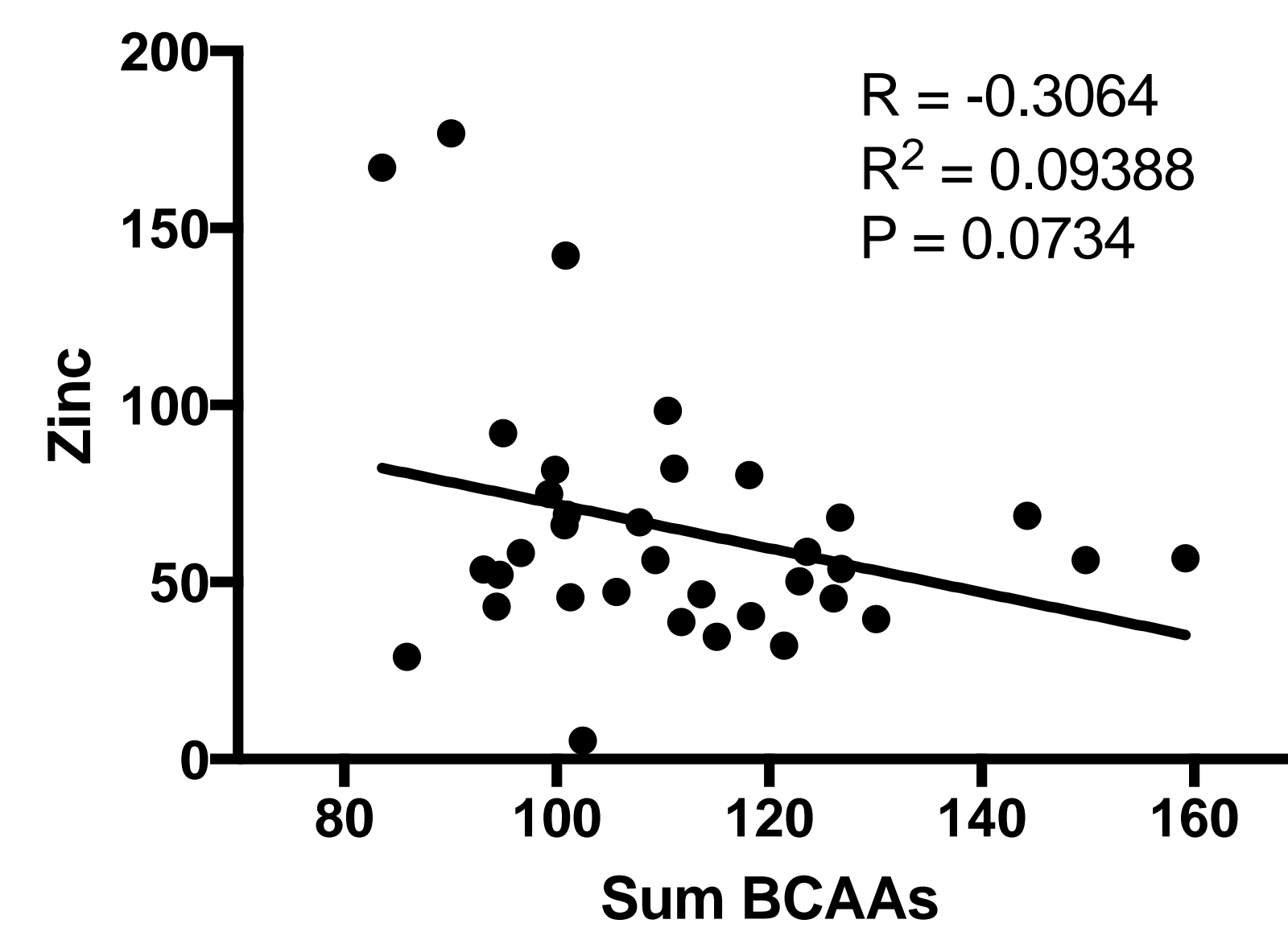
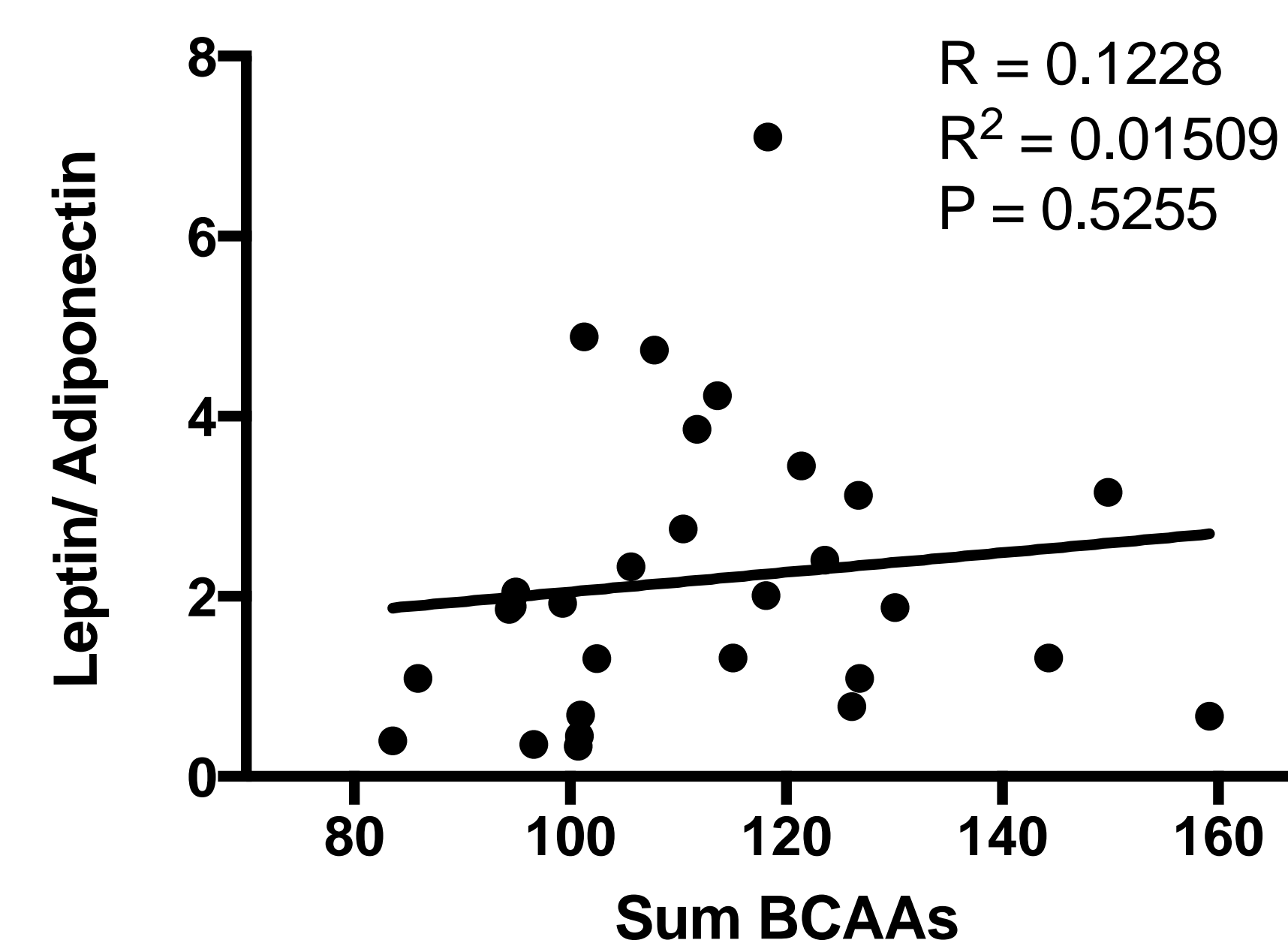
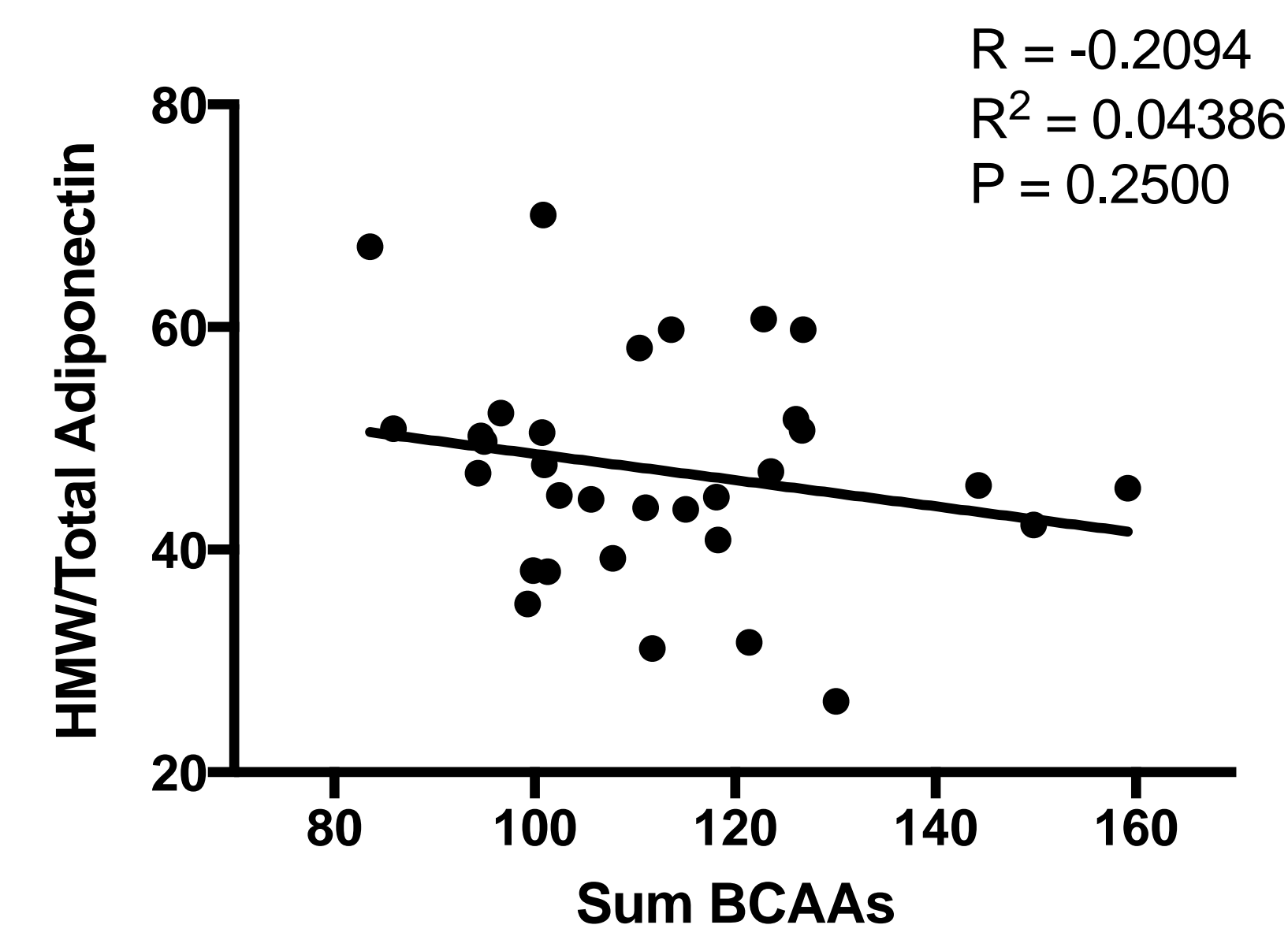
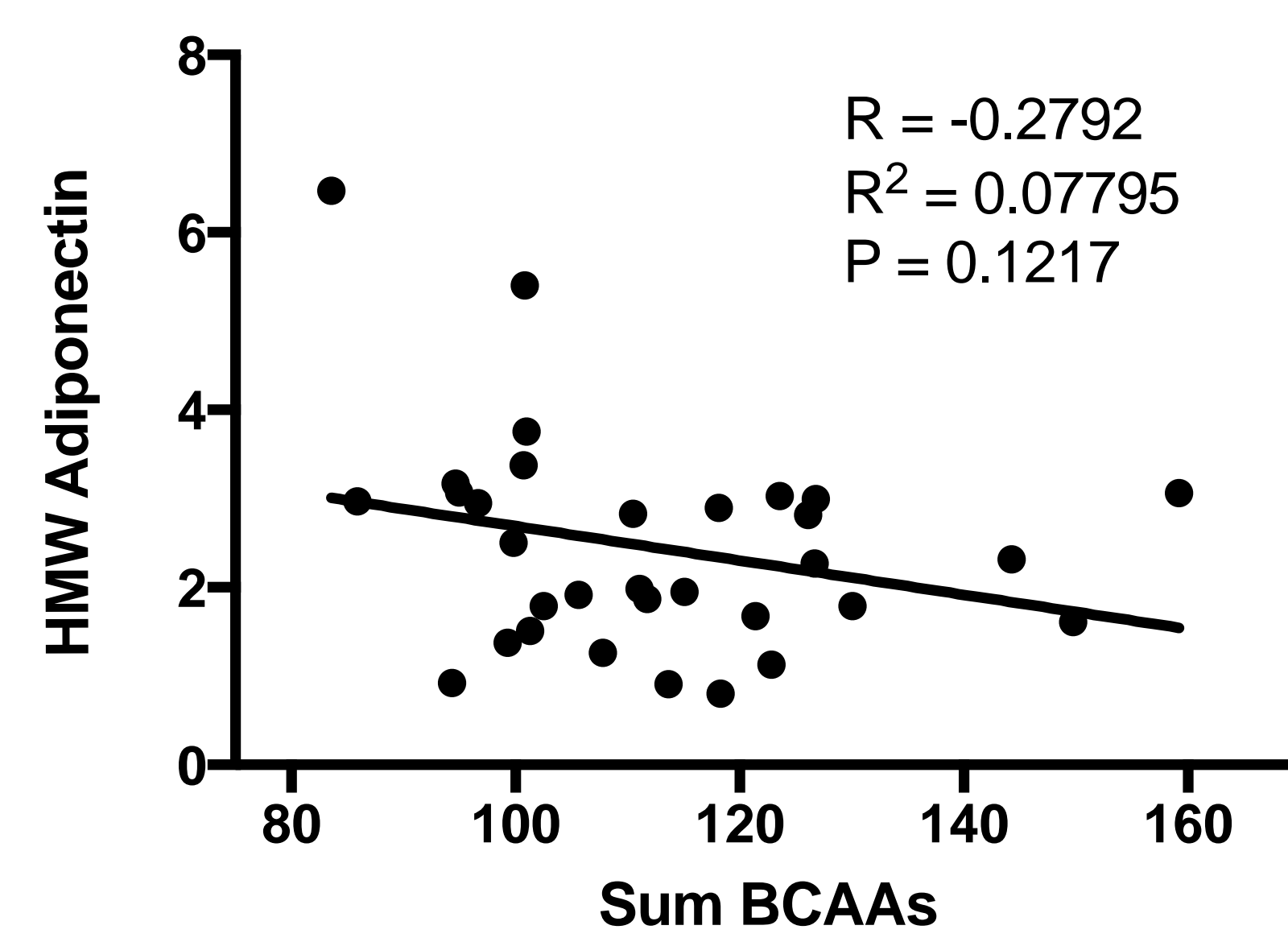
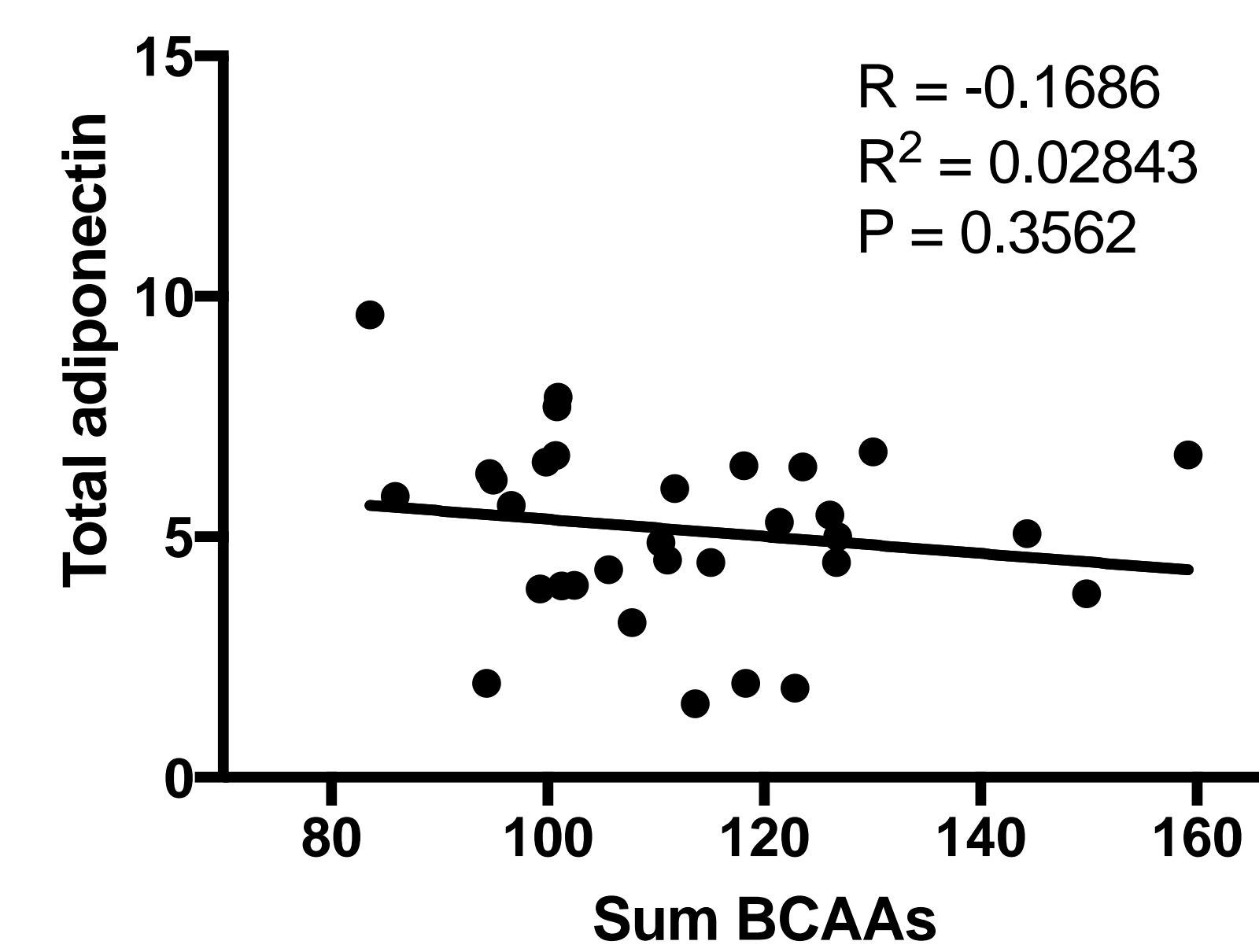
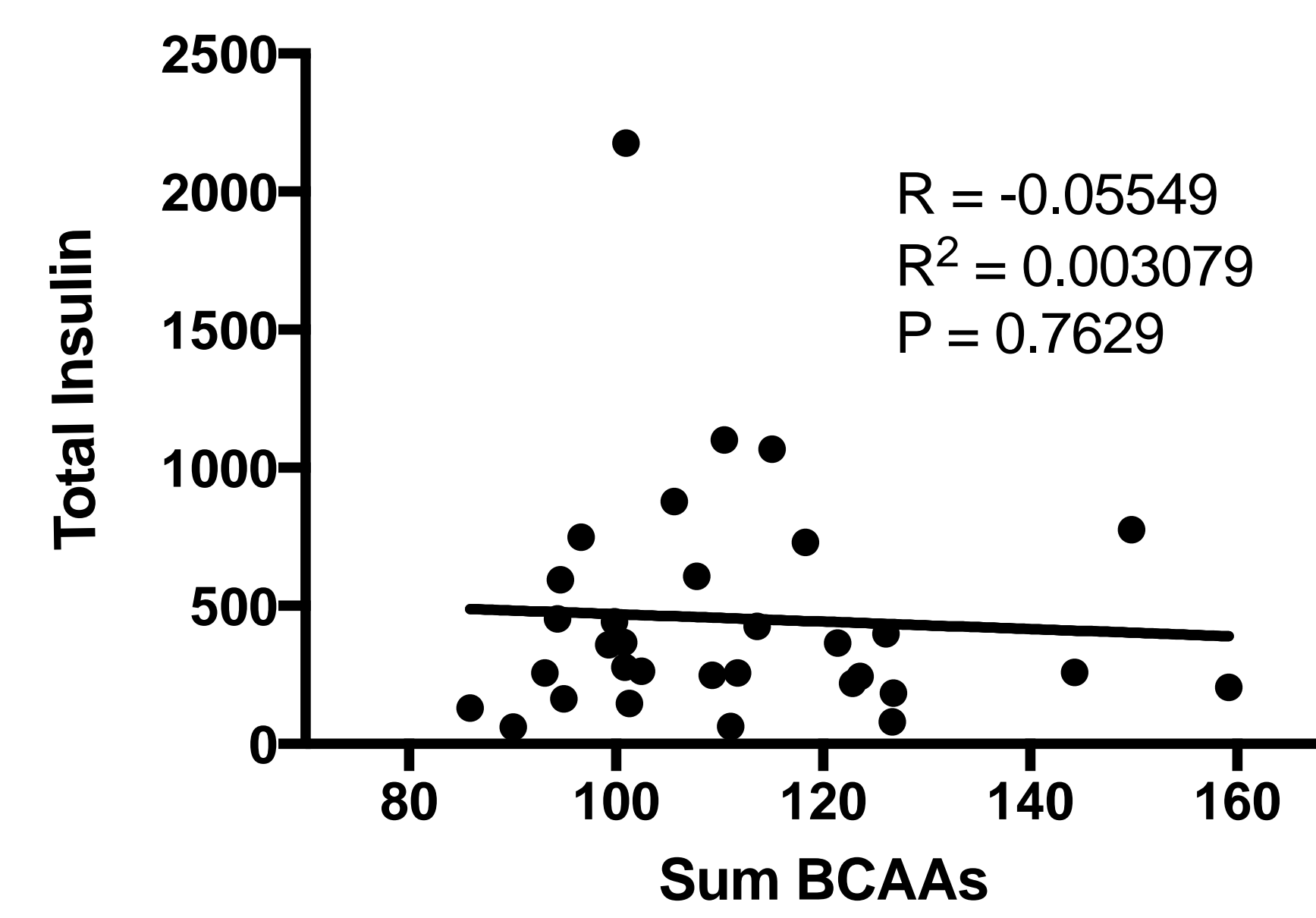
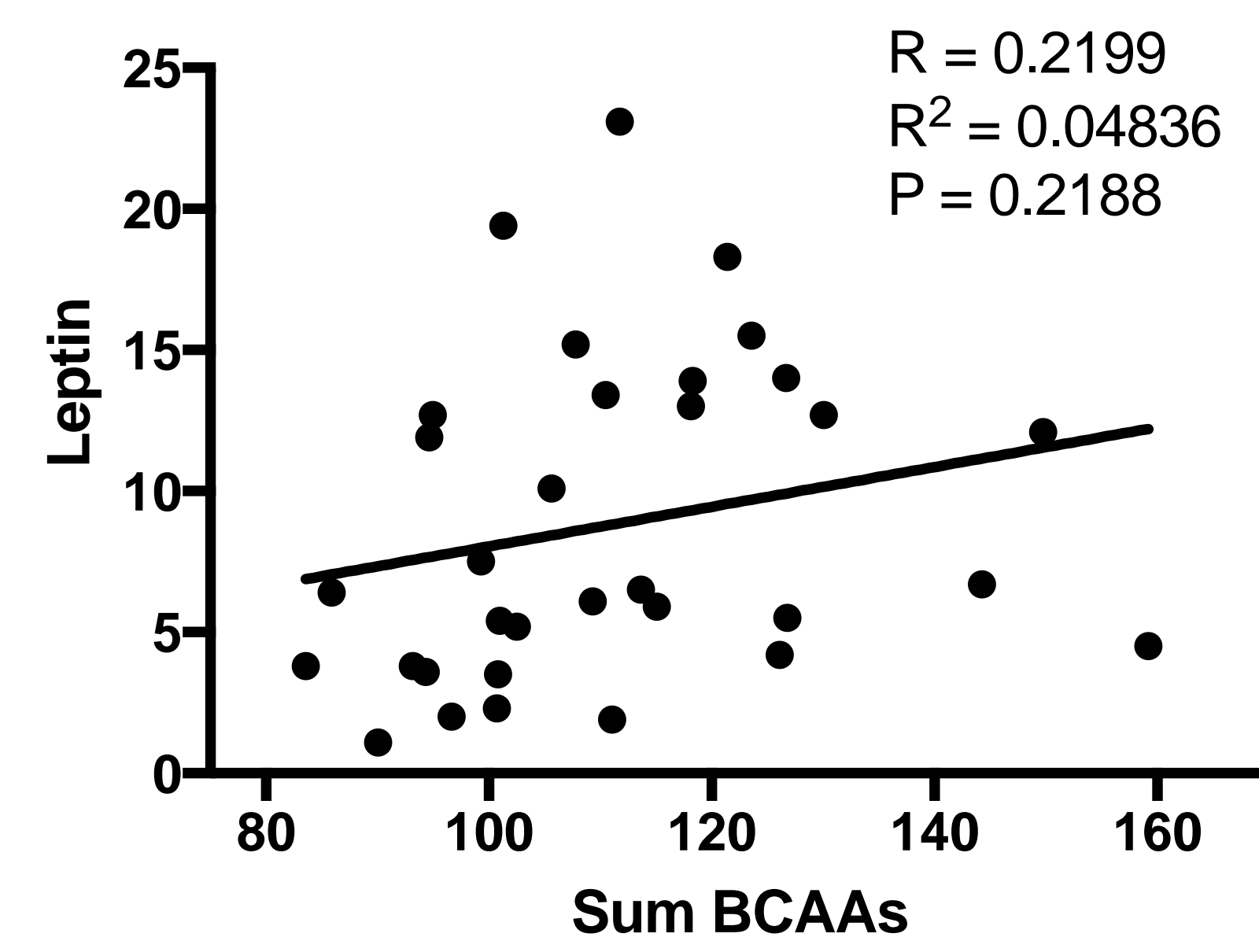


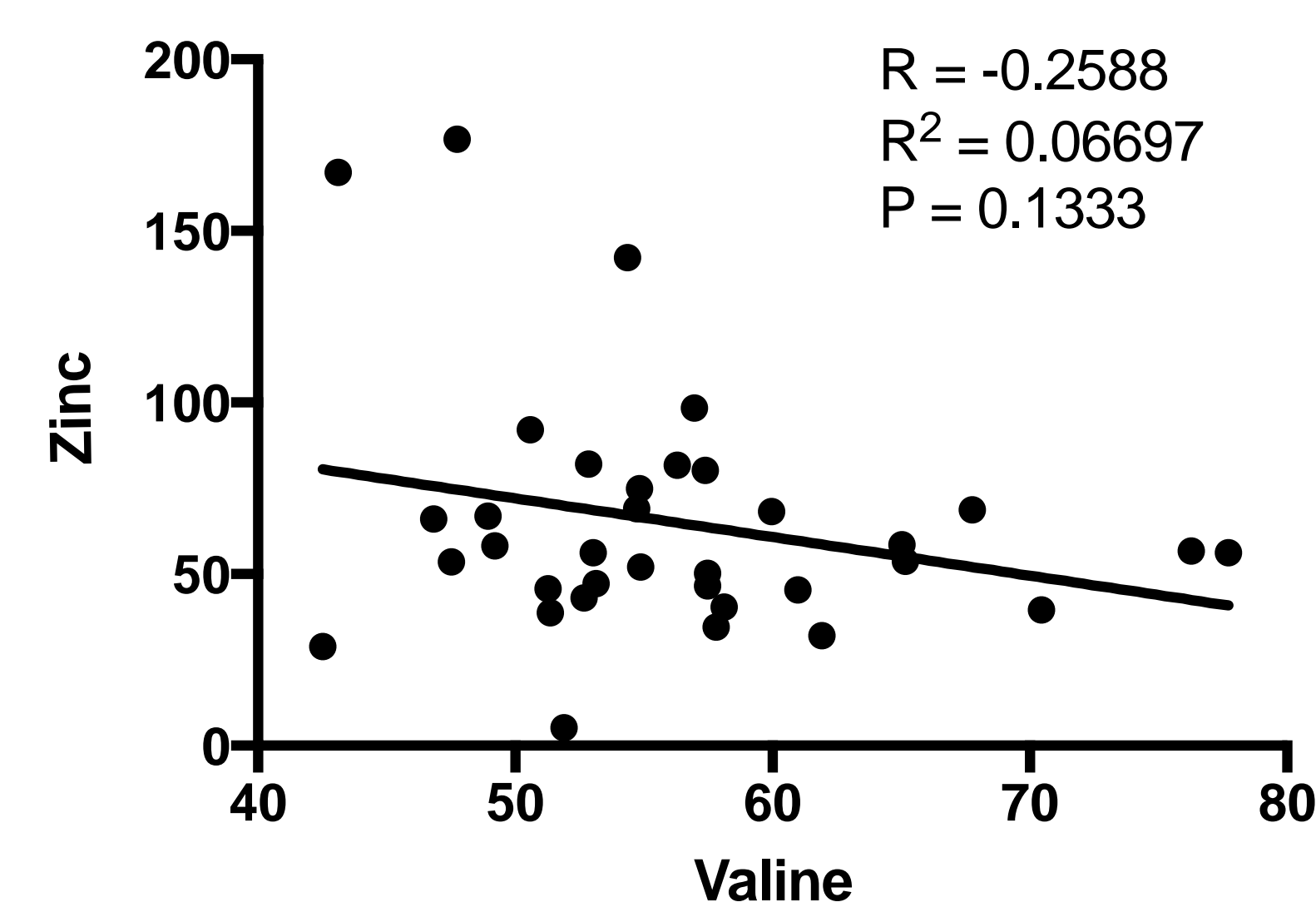
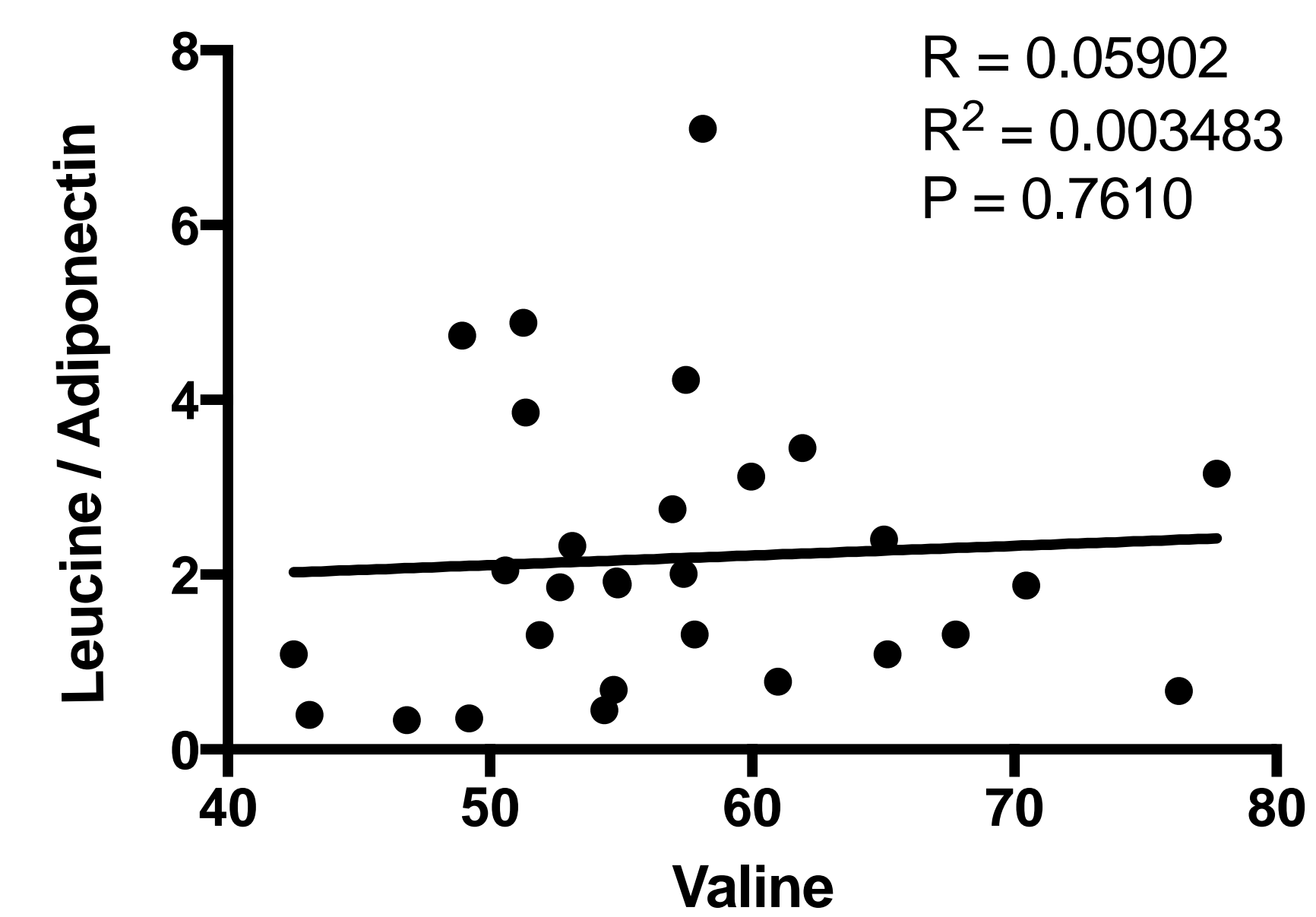
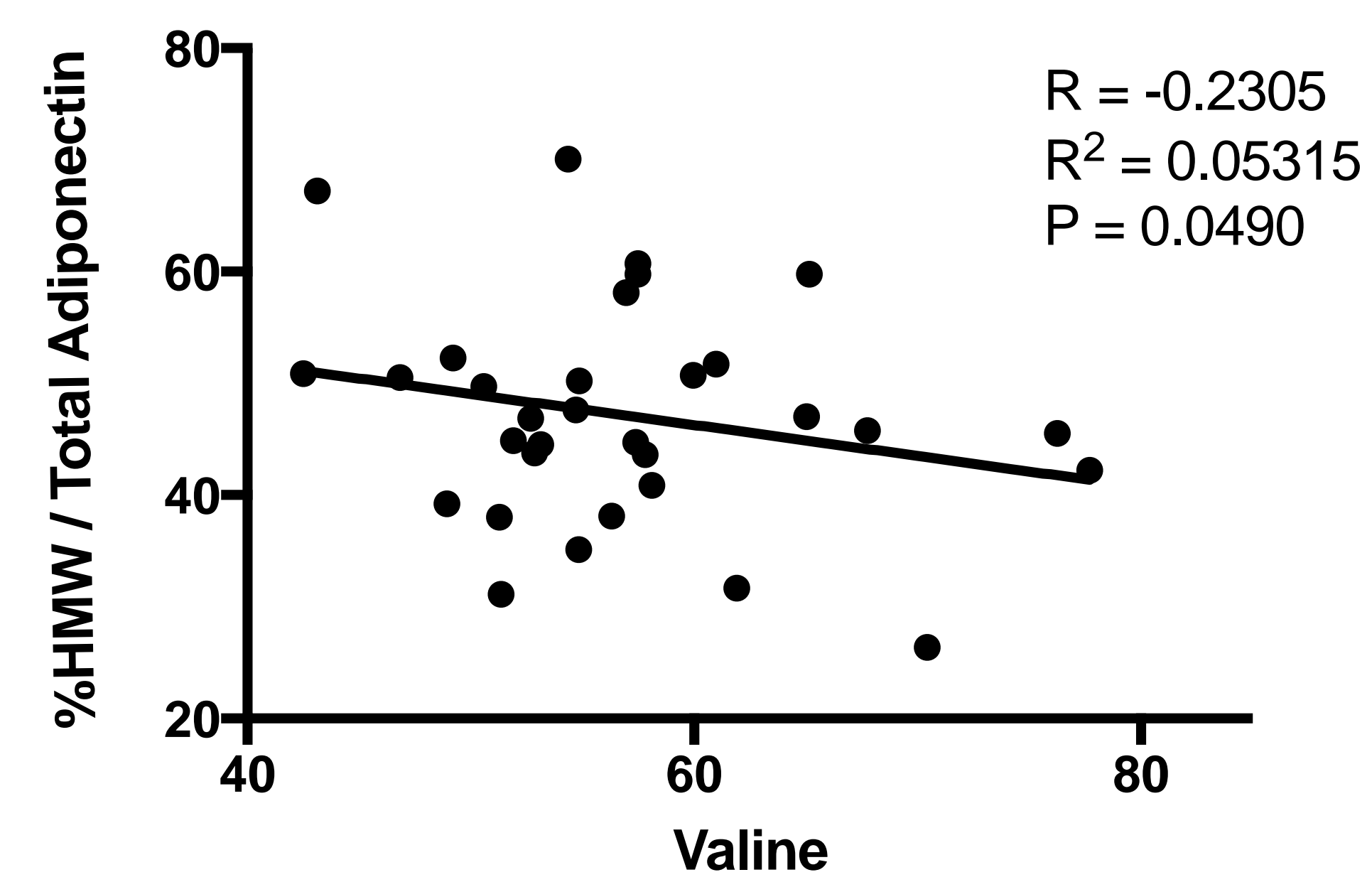
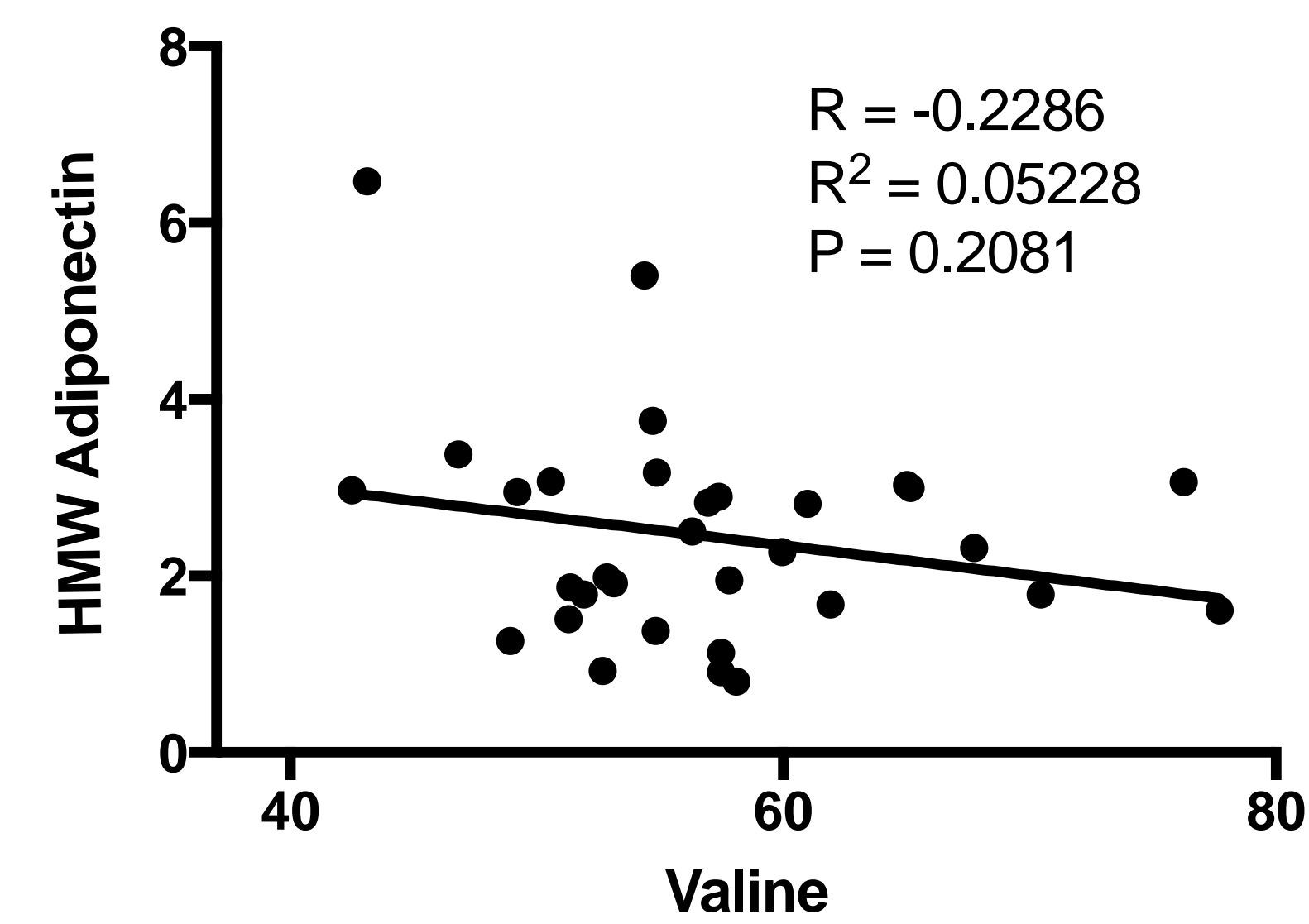
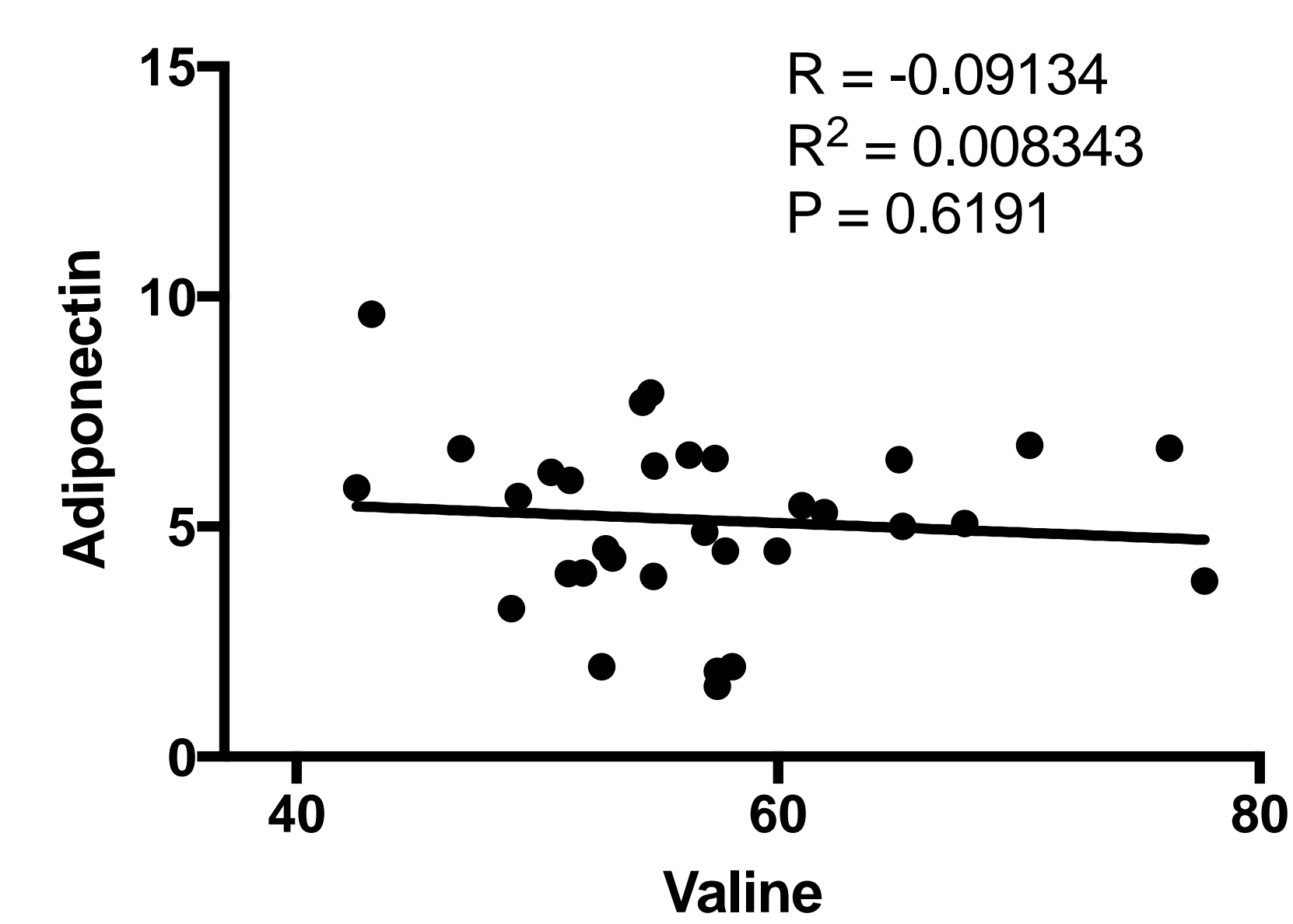
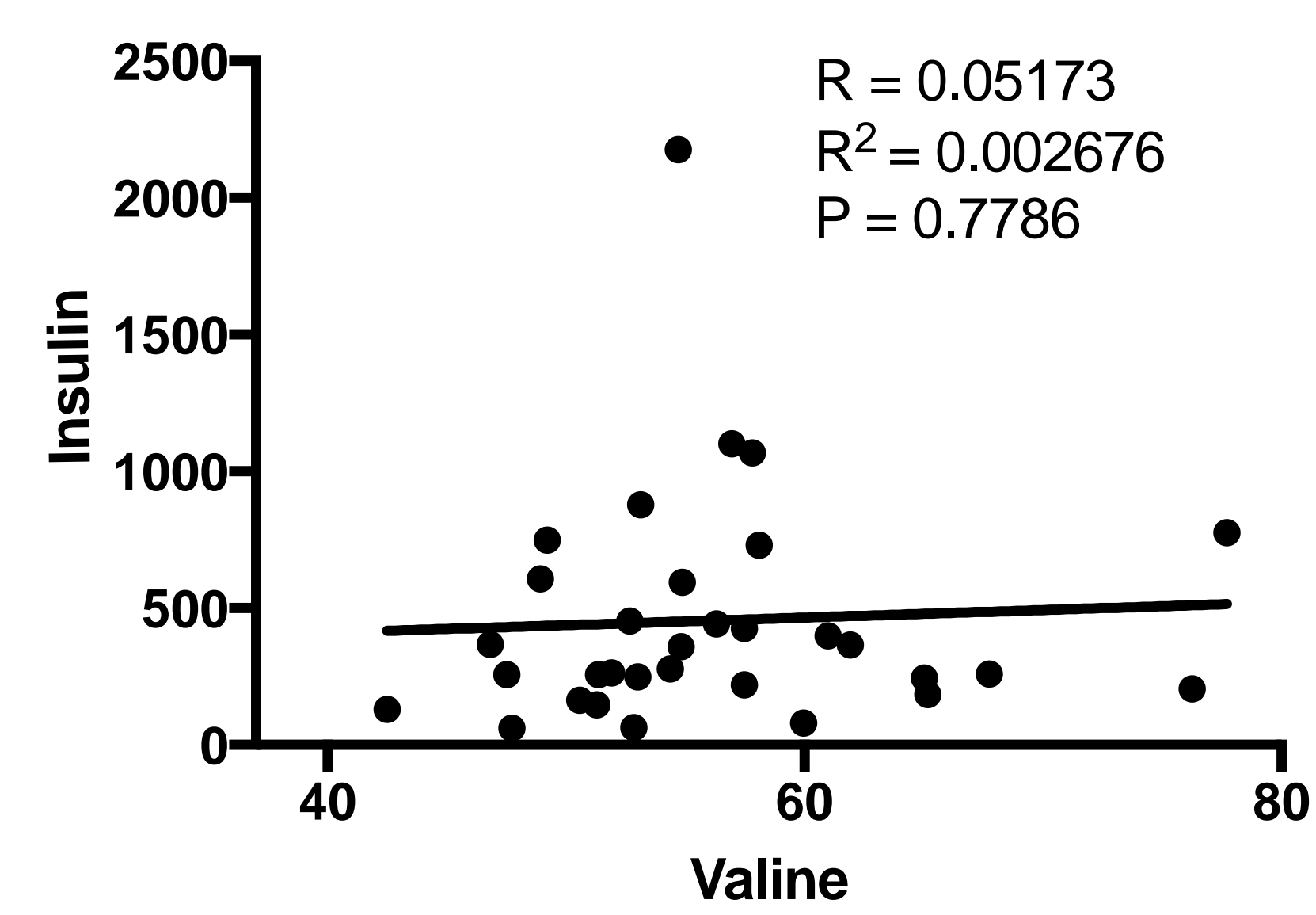
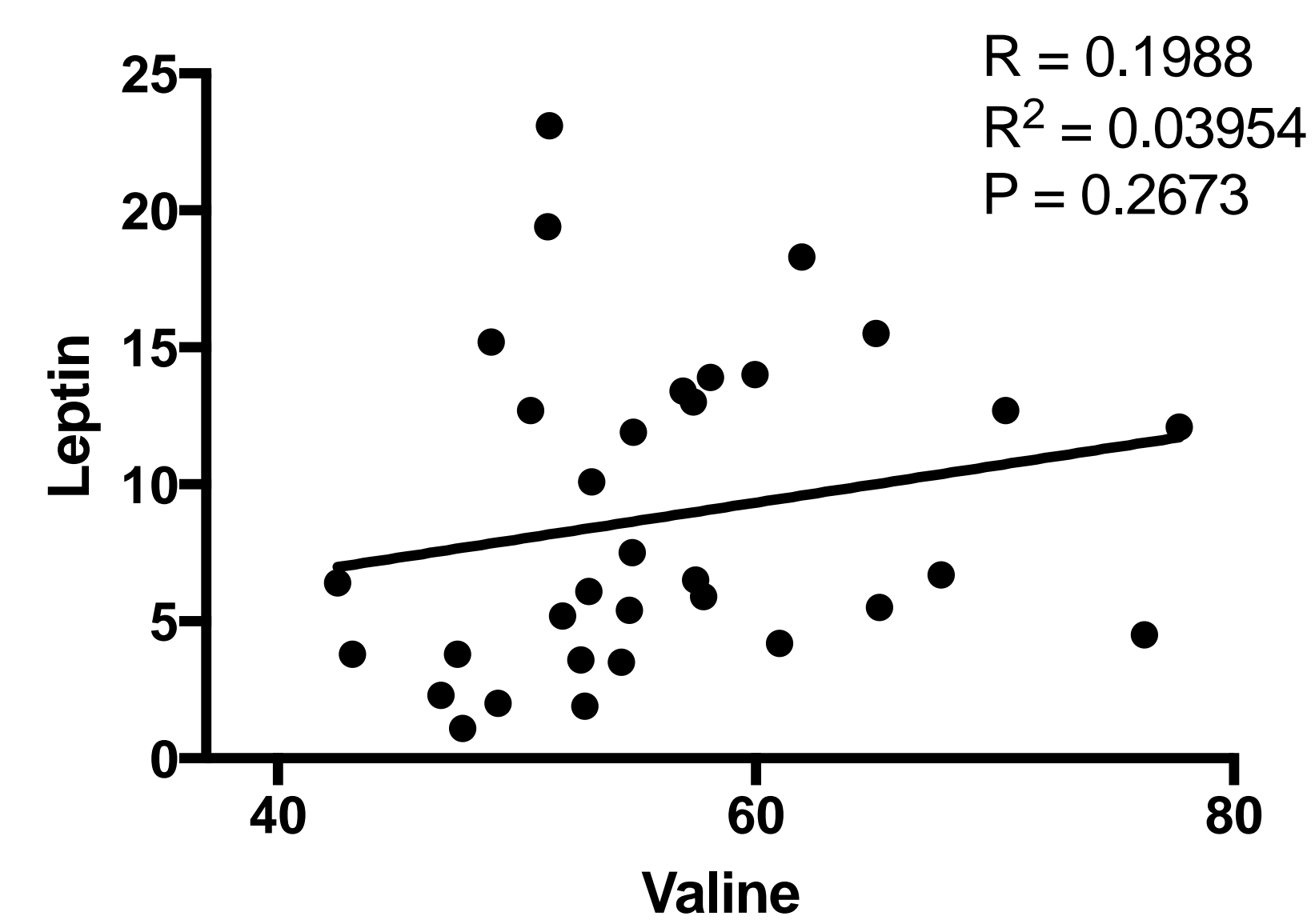


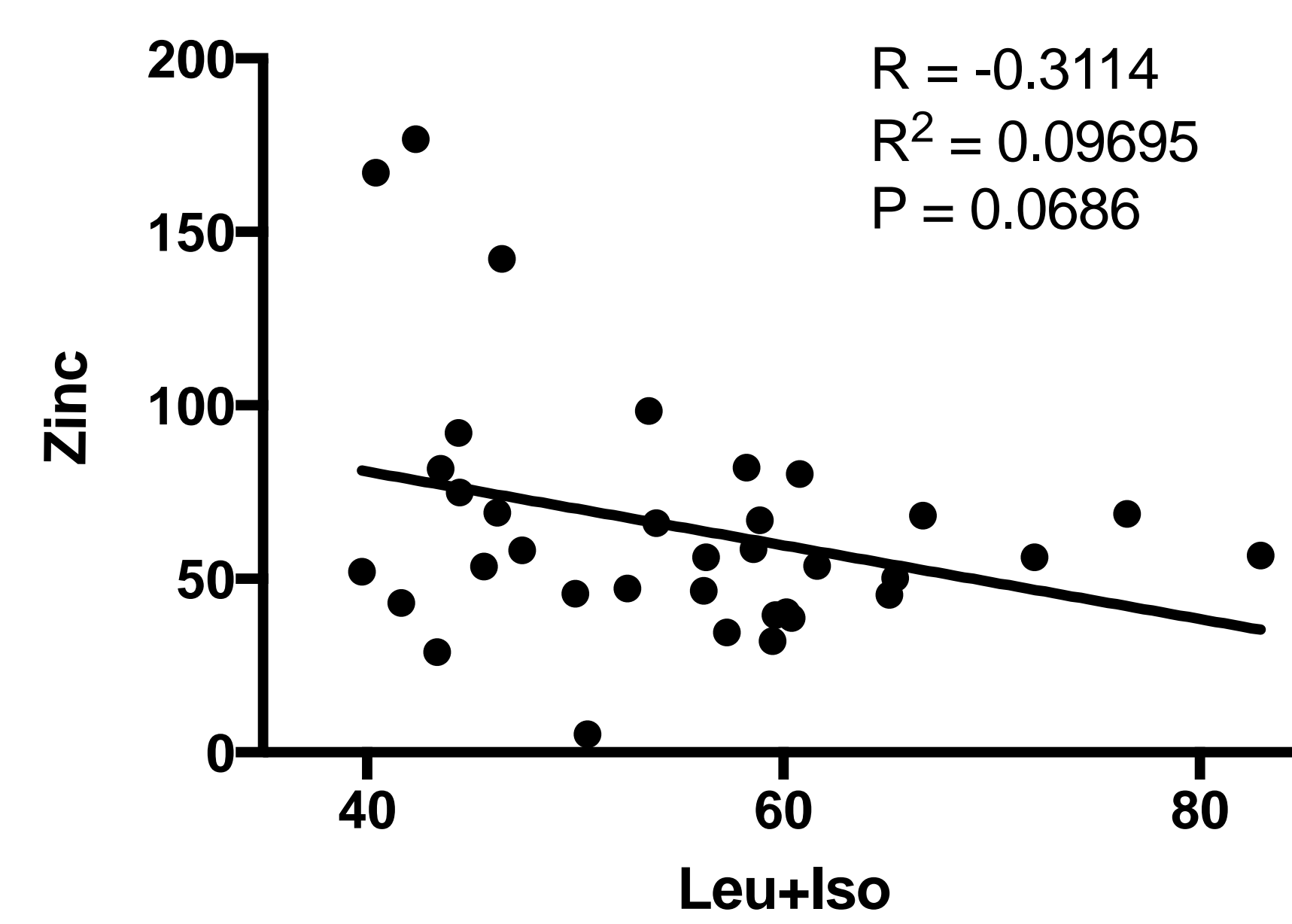
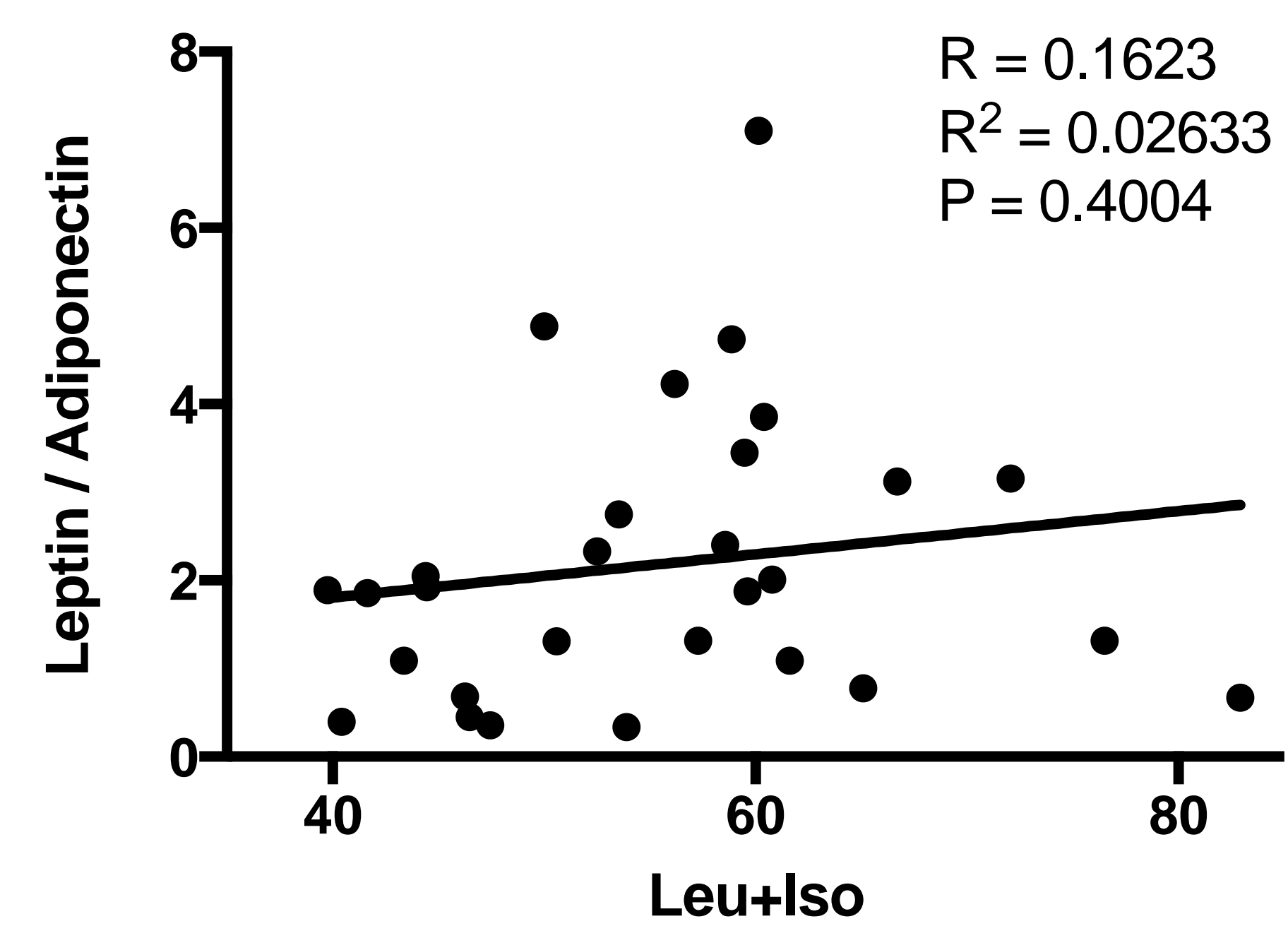
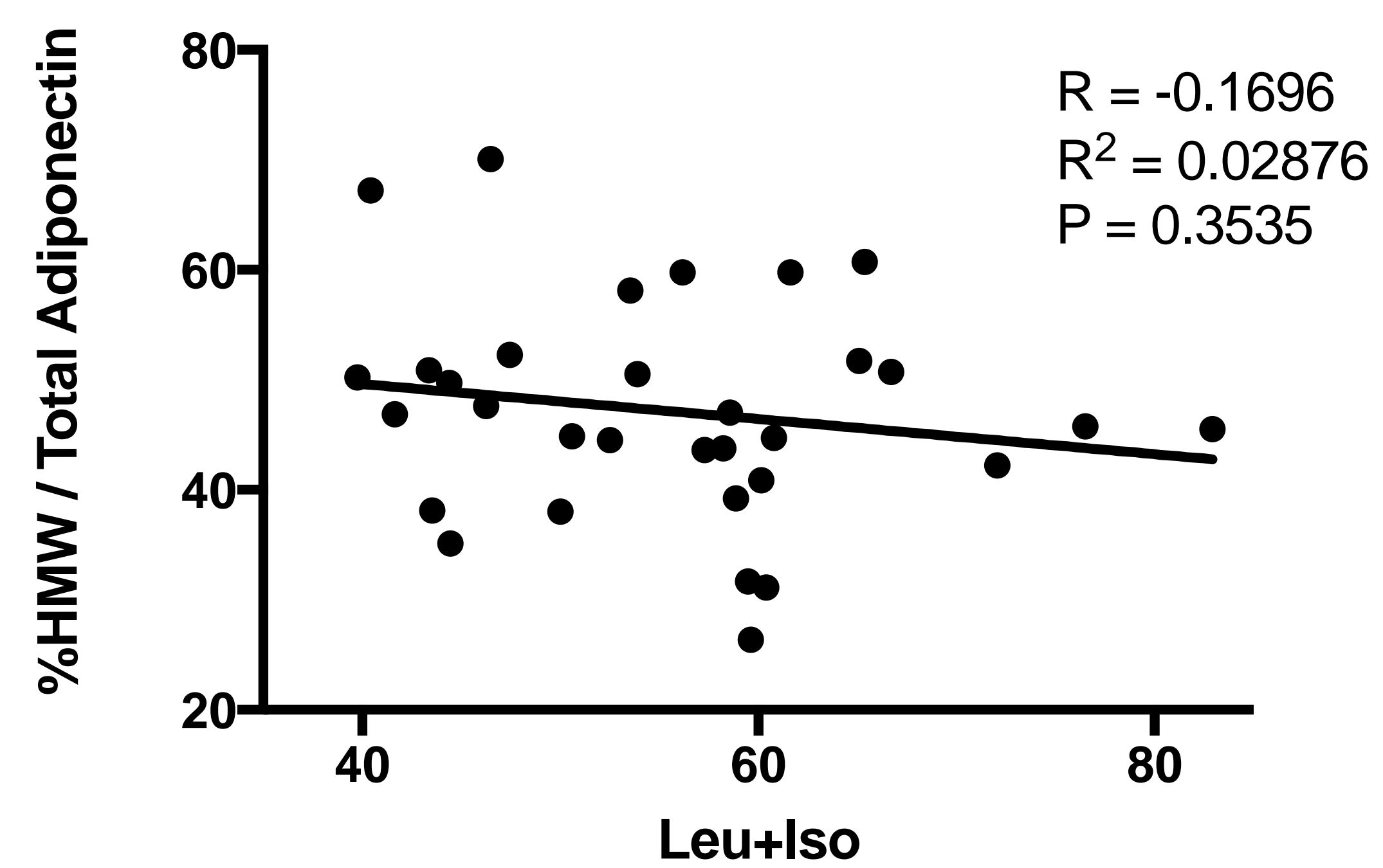
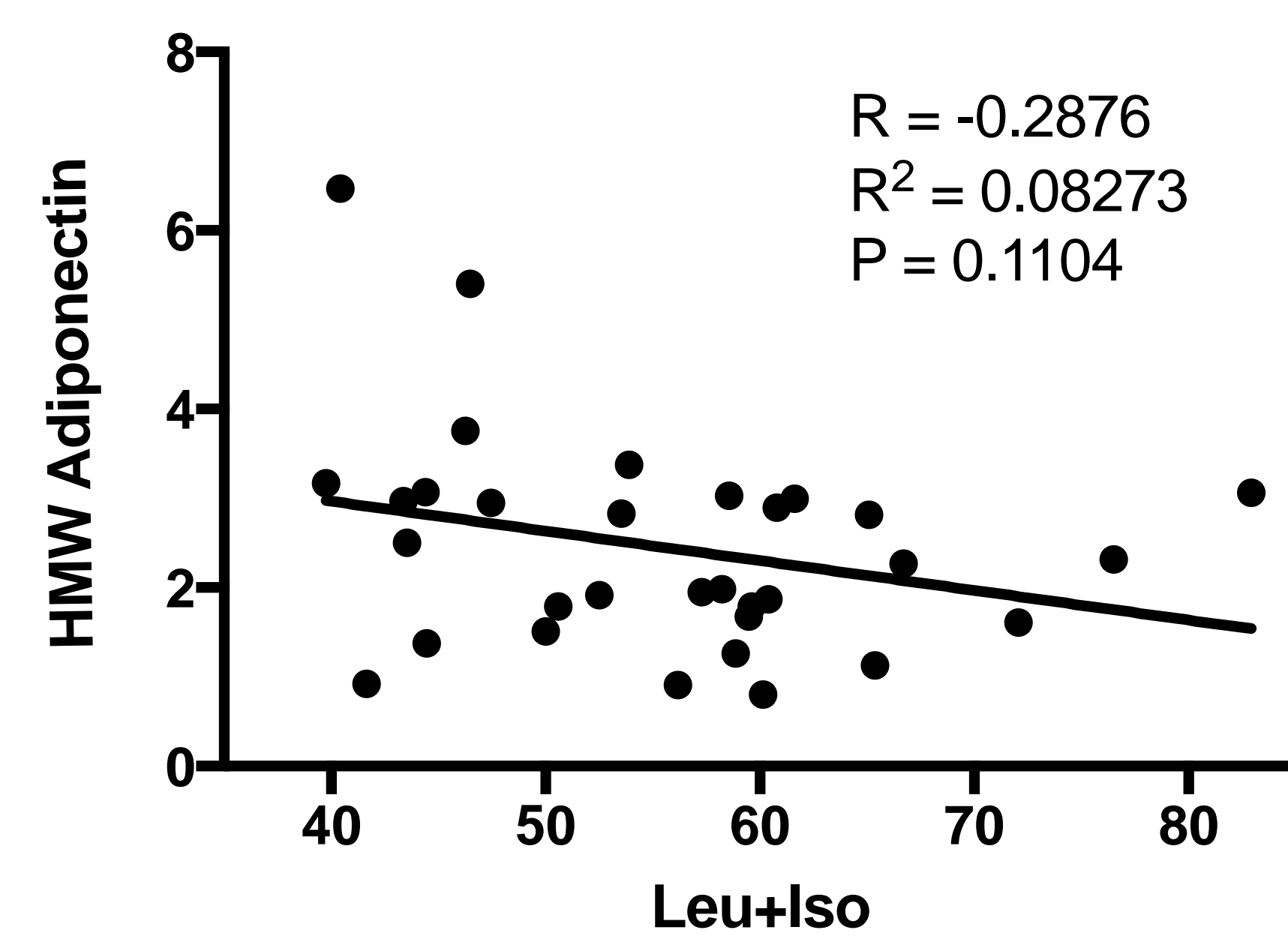
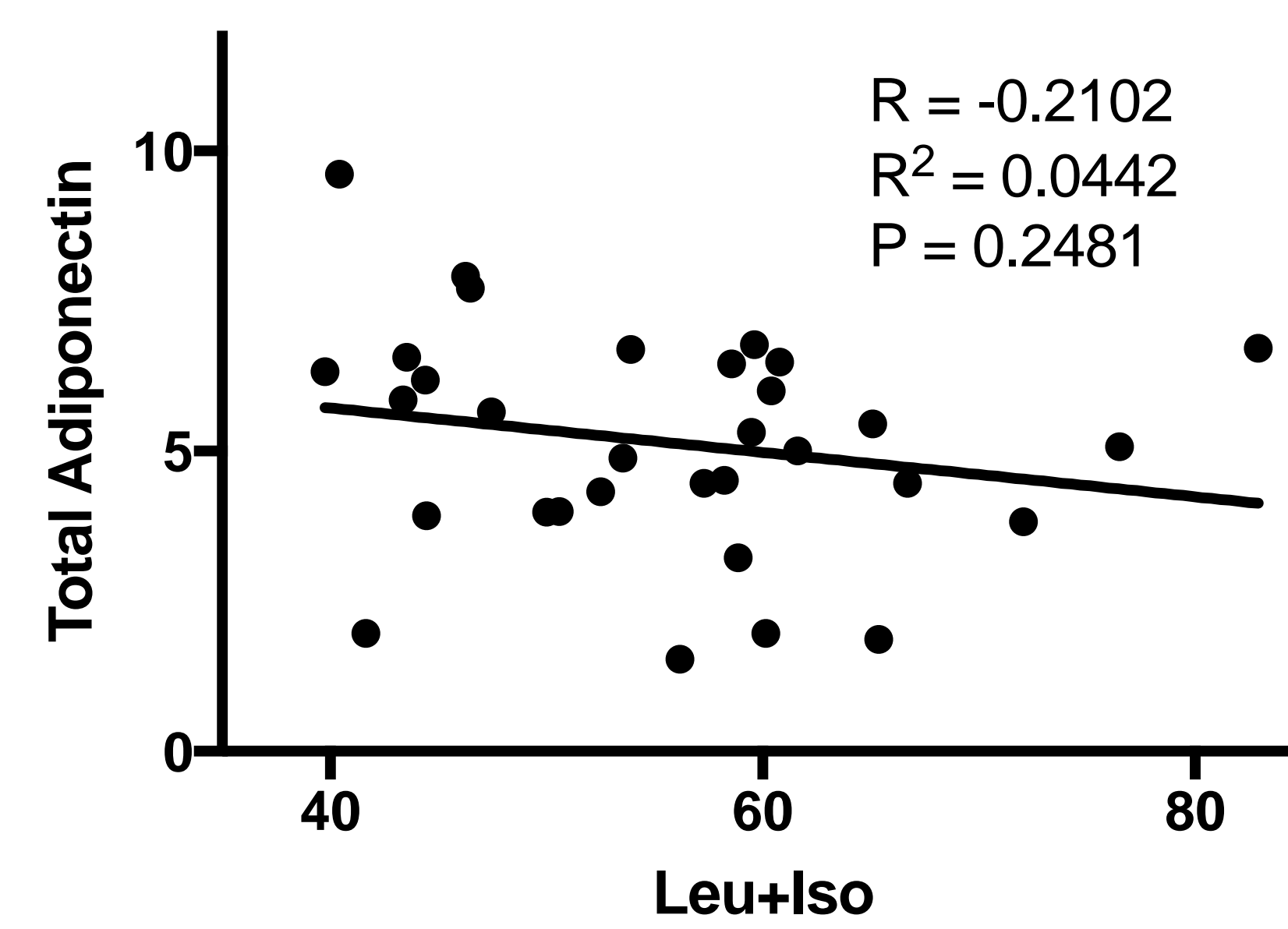
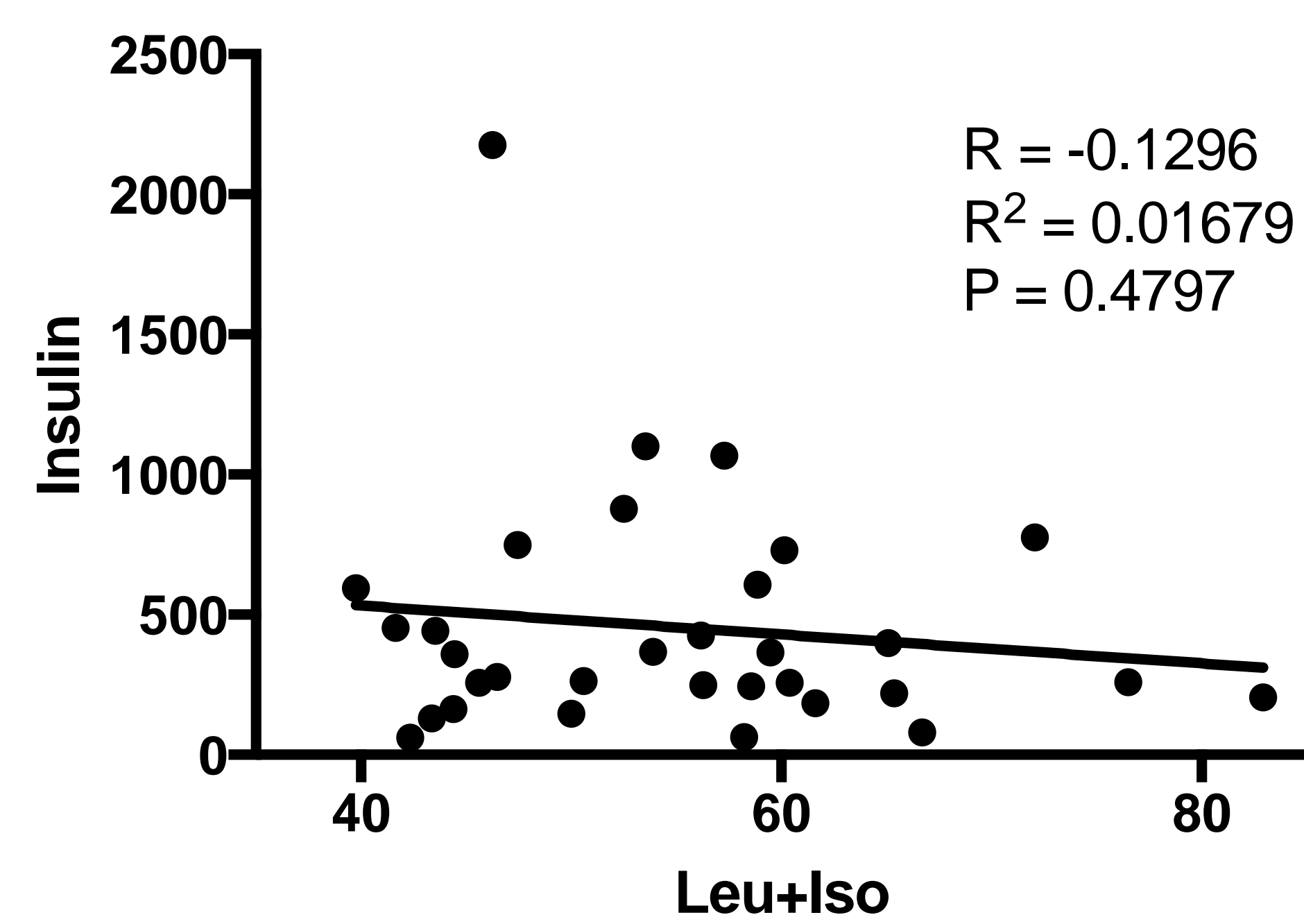
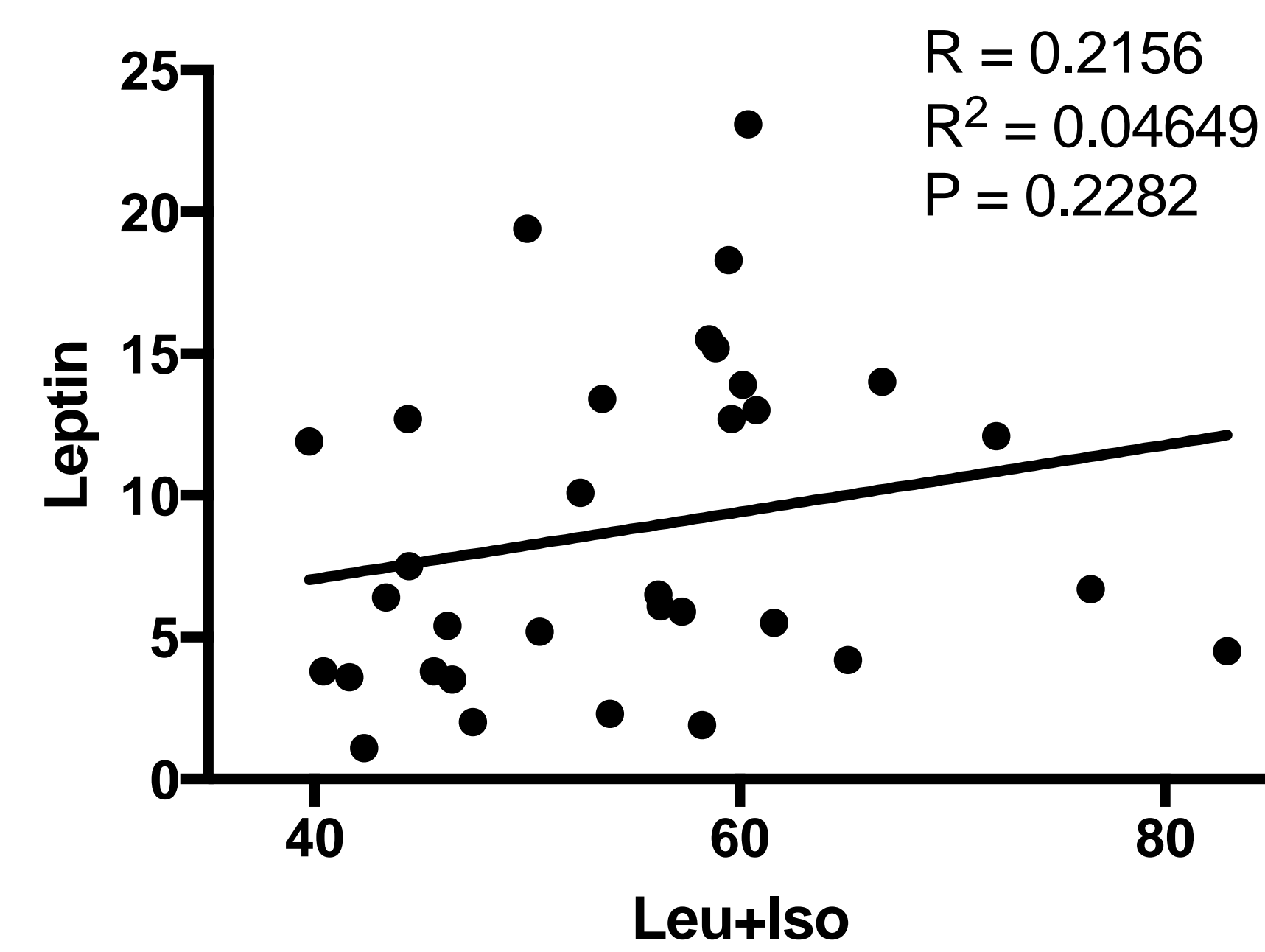


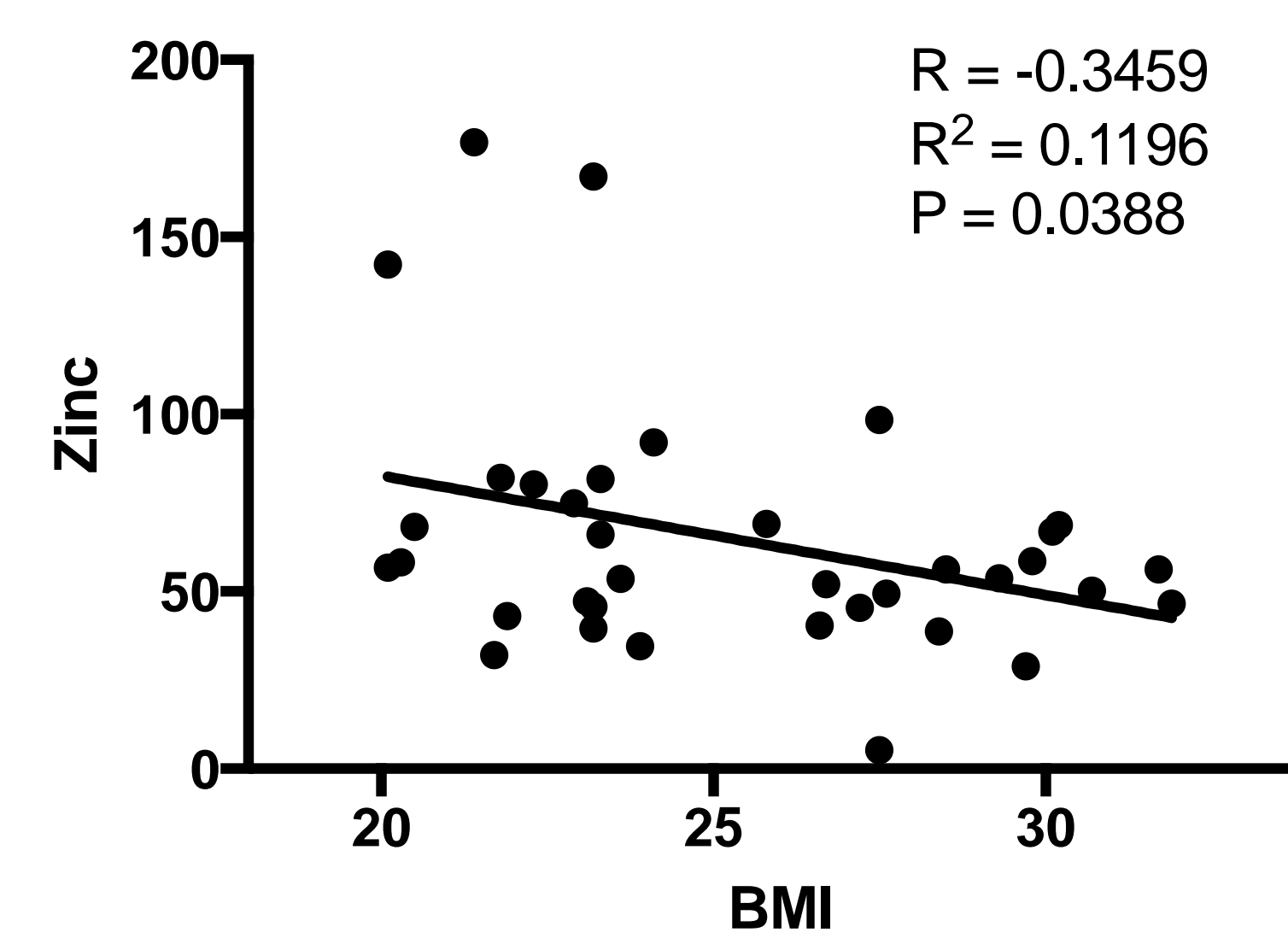
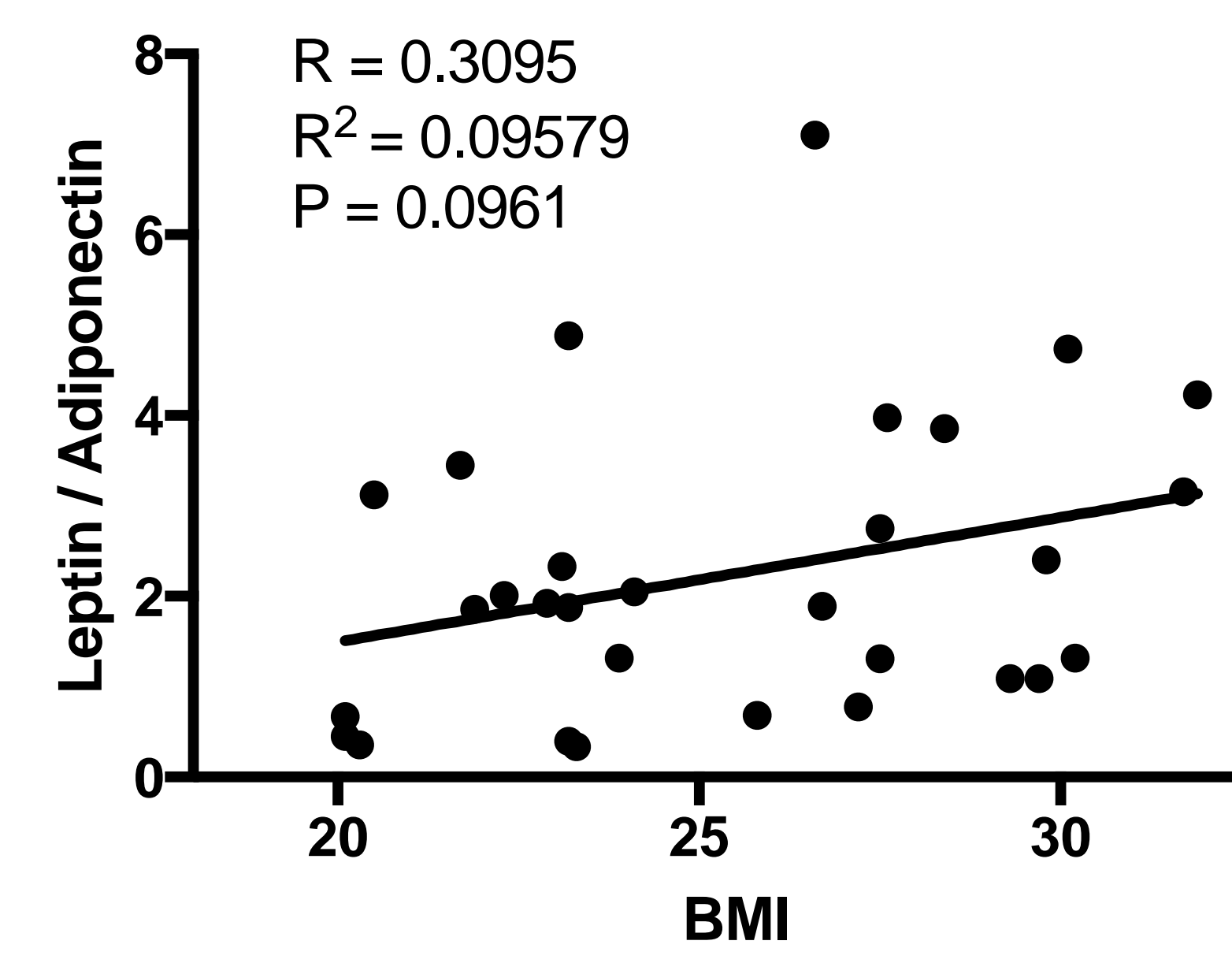
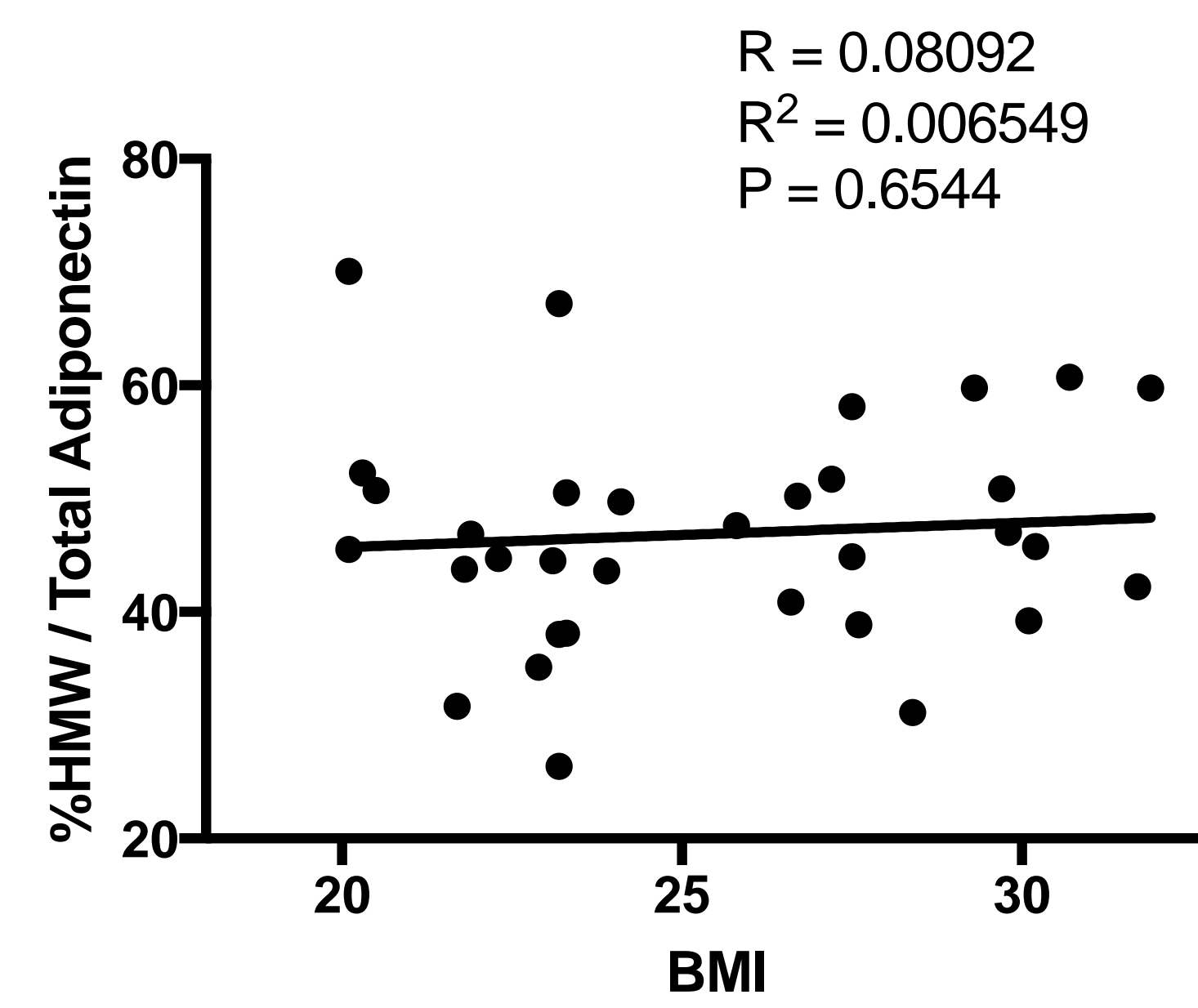
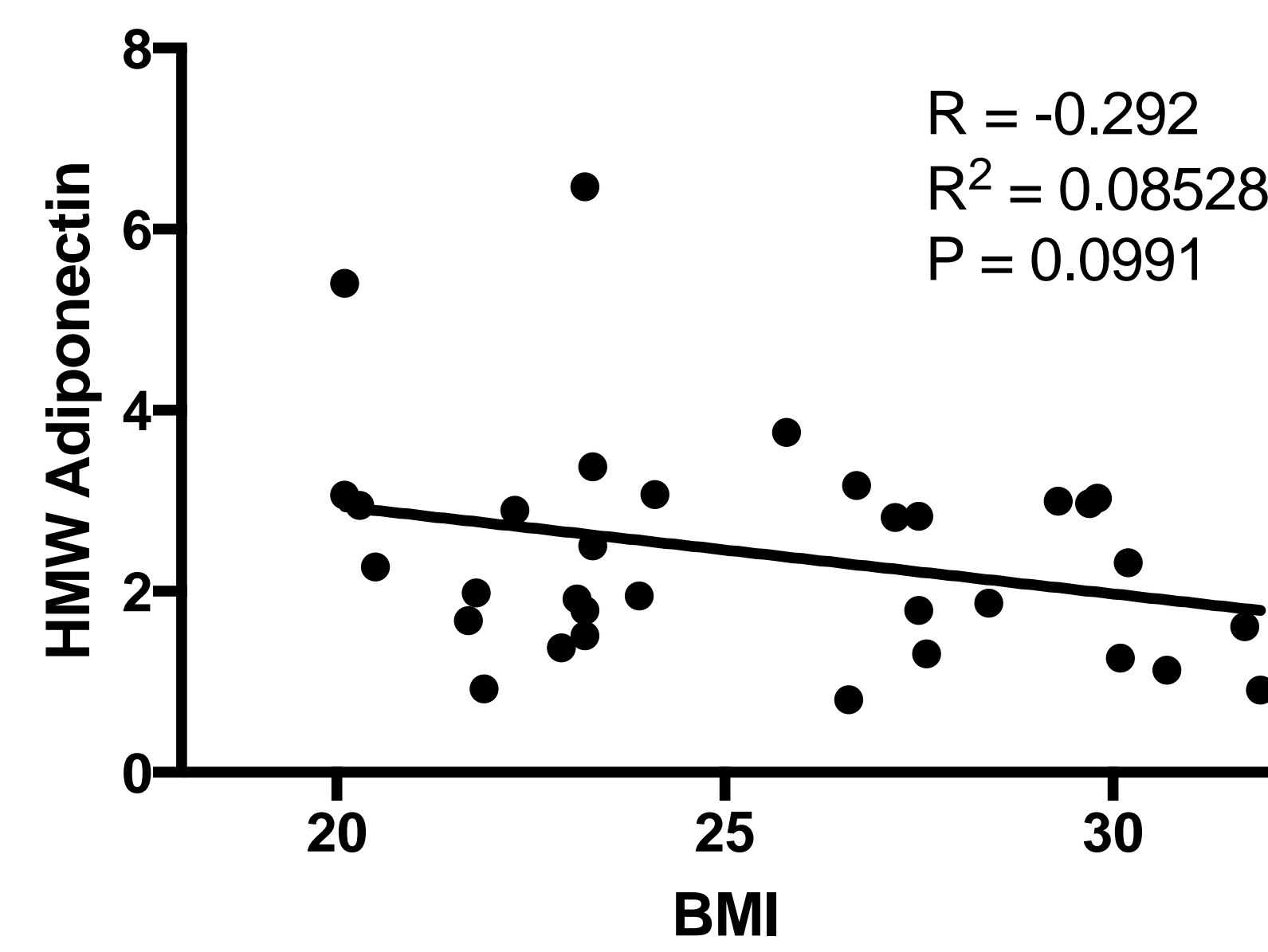
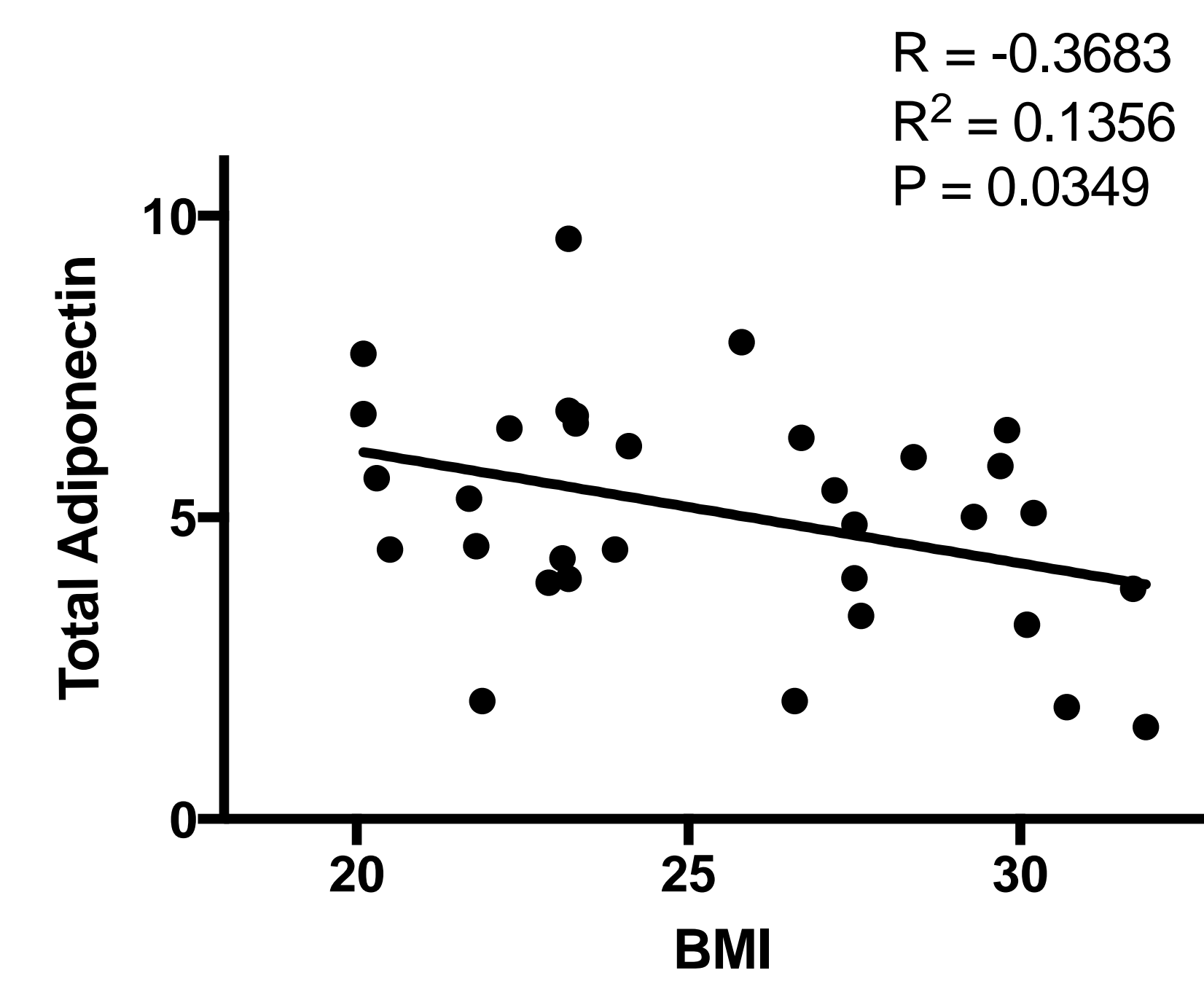
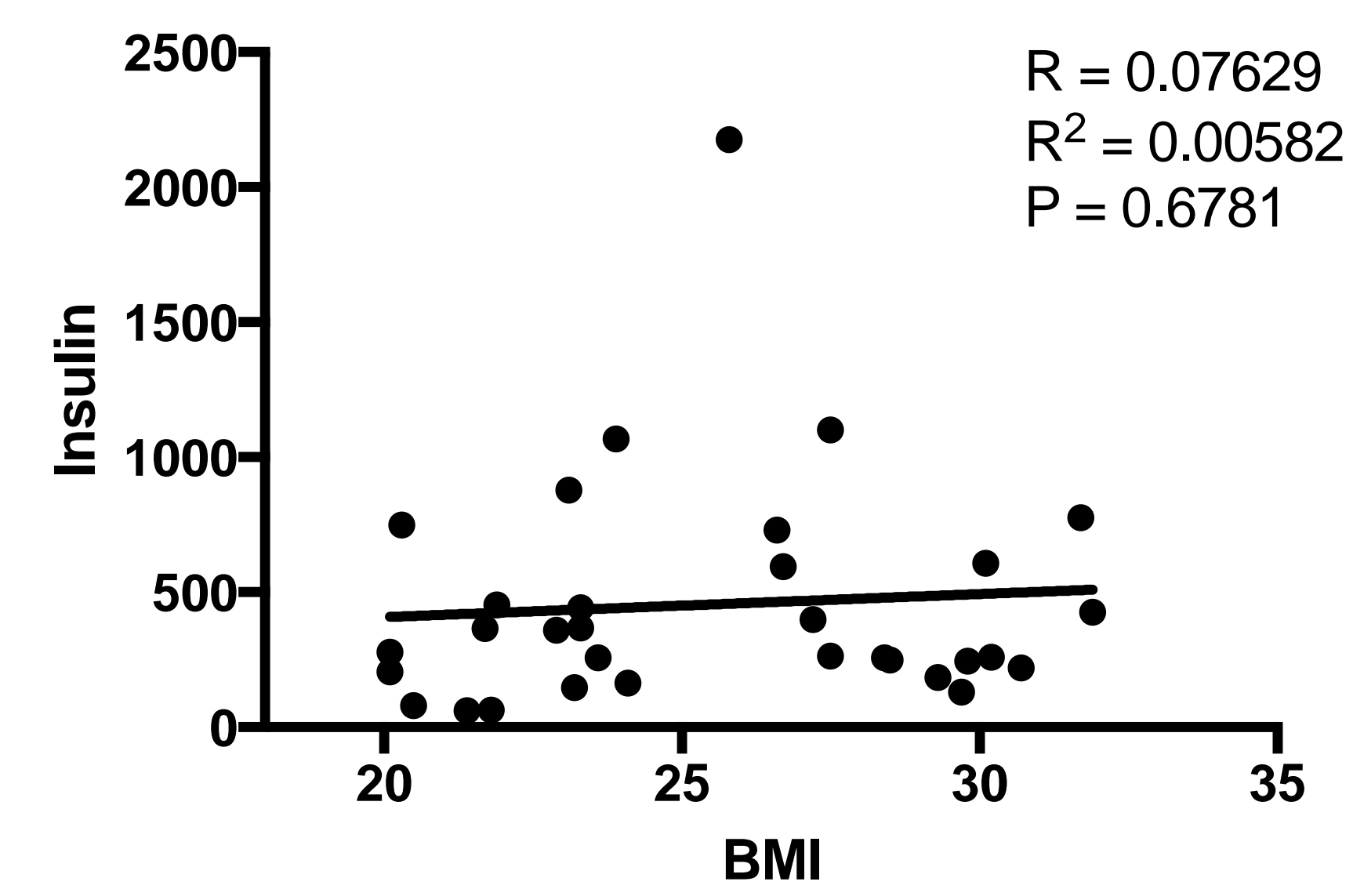
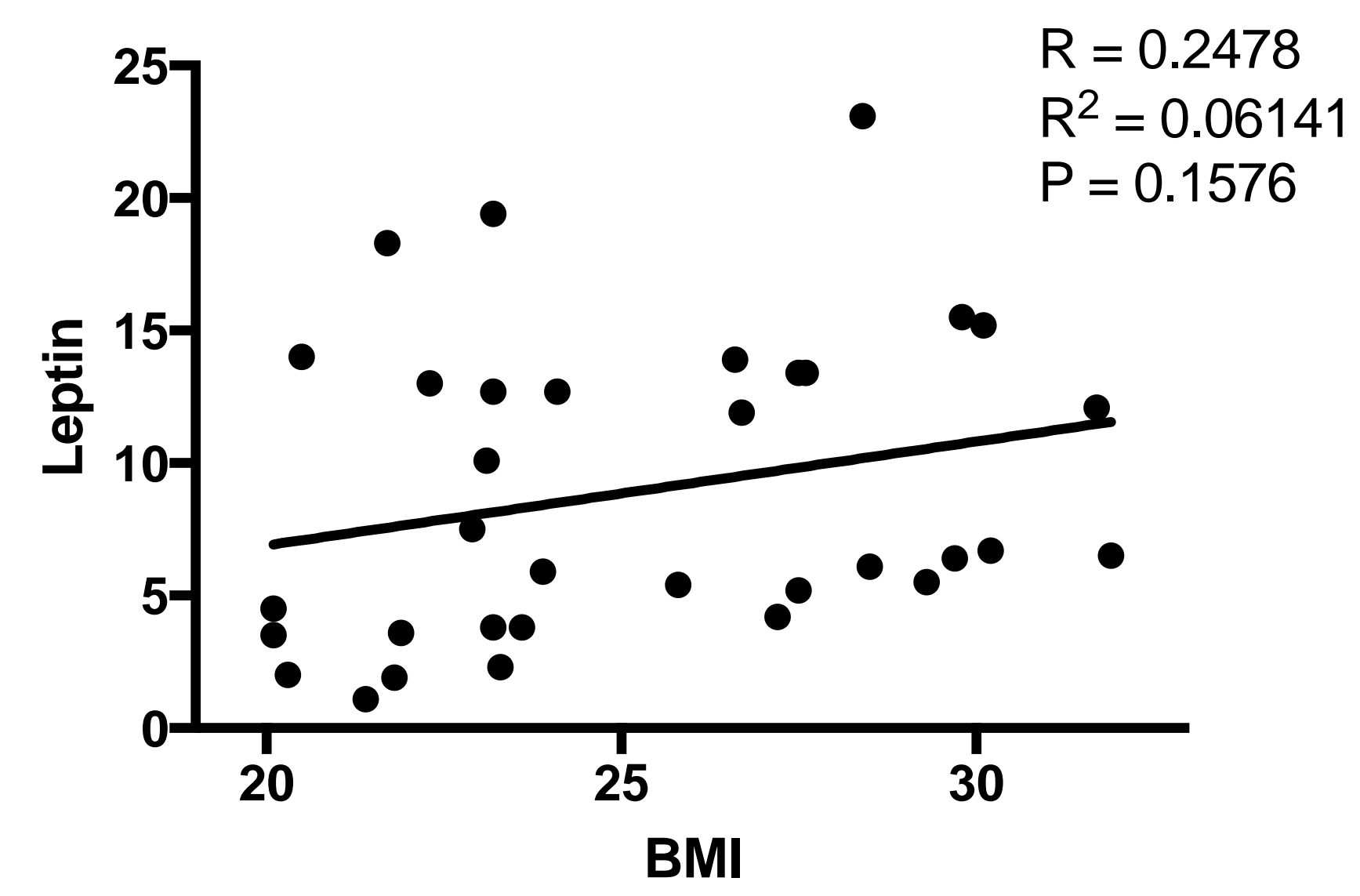
36 week data











- = NW ± LNS
- = OW/OB -LNS
- = OW/OB +LNS

Table 1. Maternal Characteristics ± Lipid Nutrient Supplementation (> 3 month prior to conception) in Normal Weight and Obese Moms							
	BMI (<25) = NW		BMI (> 25) = OW/OB		P - value		
Maternal Characteristics	- LNS (n = 10)	+ LNS (n = 9)	- LNS (n = 10)	Arm 1 (n = 10)	LNS x BMI	LNS	BMI
Age	23.8 ± 1.4	23.8 ± 1.6	24.7 ± 1.3	25.7 ± 1.5	0.728	0.728	0.333
Parity	1.6 ± 0.2	1.4 ± 0.3	1.6 ± 0.3	1.5 ± 0.3	0.863	0.605	0.863
Prepreg Ht	146 ± 1	145 ± 2	145 ± 1	142 ± 2	0.559	0.305	0.295
Prepreg Wt	47.6 ± 1.1	47.1 ± 1.5	60.8 ± 1.6	58.6 ± 1.6	0.571	0.384	<0.0001
Prepreg BMI	22.3 ± 0.4	22.3 ± 0.4	28.8 ± 0.7	28.9 ± 0.6	0.892	0.935	<0.0001

Table 1. Maternal Characteristics ± Lipid Nutrient Supplementation (> 3 month prior to conception) in Normal Weight and Obese Moms							
	BMI (<25) = NW		BMI (> 25) = OW/OB		P - value		
12 Weeks	- LNS (n = 10)	+ LNS (n = 9)	- LNS (n = 10)	+ LNS (n = 10)	LNS x BMI	LNS	BMI
Total Adiponectin (µg/mL)	6.8 ± 0.8	5.02 ± 1.67	5.6 ± 0.8	4.3 ± 0.5			
HMW Adiponectin (µg/mL)	3.2 ± 0.3	3.32 ± 1.11	3.7 ± 0.4	2.6 ± 0.4			
% HMW / Total Adiponectin (µg/mL)	55.9 ± 3.2	67.54 ± 22.51	70.1 ± 4.8	59.0 ± 5.4			
Leptin (ng/mL)	10.8 ± 3.4	4.2 ± 1.4	14.0 ± 3.2	11.5 ± 2.8			
Leptin / Adiponectin							
Insulin (µIU/mL)							