

# Insulin-Like Growth Factor 1 and Insulin-Like Growth Factor Binding Protein 3 Growth Panel, Serum

**Test ID:** IGFPN

**Useful for:**

Evaluation of growth disorders  
Evaluation of growth hormone deficiency or excess in children and adults  
Monitoring of recombinant human growth hormone treatment  
Follow-up of individuals with acromegaly and gigantism

**Reflex Tests:**

Test ID	Reporting Name	Available Separately	Always Performed
IGF1S	Insulin-Like Growth Factor 1, S	Yes	Yes
IGFB3	IGFBP-3, S	Yes	Yes

**Methods:**

IGF1S: Chemiluminescence  
IGFB3: Enzyme-Labeled Chemiluminescent Immunometric Assay

**Reference Values:**

INSULIN-LIKE GROWTH FACTOR 1

Male:

<1 year: 27.0-157.0 ng/mL

1 year: 29.7-166.8 ng/mL

2 years: 33.9-183.9 ng/mL

3 years: 39.0-204.5 ng/mL

4 years: 44.3-225.0 ng/mL

5 years: 50.0-245.5 ng/mL

6 years: 56.2-267.1 ng/mL

7 years: 63.4-291.9 ng/mL

8 years: 72.4-323.1 ng/mL

9 years: 83.6-361.6 ng/mL

10 years: 96.9-406.6 ng/mL

11 years: 111.6-454.4 ng/mL

12 years: 126.1-498.7 ng/mL

13 years: 138.6-532.5 ng/mL  
14 years: 147.5-551.2 ng/mL  
15 years: 152.2-553.5 ng/mL  
16 years: 152.9-541.8 ng/mL  
17 years: 150.6-520.6 ng/mL  
18 years: 146.2-493.6 ng/mL  
19 years: 140.2-462.7 ng/mL  
20 years: 133.1-430.0 ng/mL  
21-25 years: 115.2-354.8 ng/mL  
26-30 years: 97.9-281.6 ng/mL  
31-35 years: 88.3- 246.0 ng/mL  
36-40 years: 83.4-232.7 ng/mL  
41-45 years: 74.9-216.4 ng/mL  
46-50 years: 66.9-205.1 ng/mL  
51-55 years: 60.6-200.3 ng/mL  
56-60 years: 54.3-194.2 ng/mL  
61-65 years: 48.8-187.7 ng/mL  
66-70 years: 46.5-191.9 ng/mL  
71-75 years: 40.9-179.2 ng/mL  
76-80 years: 37.1-172.0 ng/mL  
81-85 years: 33.8-165.4 ng/mL  
86-90 years: 32.2-166.1 ng/mL

Females:

<1 year: 17.9-125.6 ng/mL  
1 year: 19.5-132.3 ng/mL  
2 years: 22.2-145.4 ng/mL  
3 years: 25.9-164.2 ng/mL  
4 years: 30.7-187.8 ng/mL  
5 years: 36.2-214.4 ng/mL  
6 years: 42.0-240.4 ng/mL  
7 years: 48.6-269.6 ng/mL  
8 years: 56.9-305.3 ng/mL  
9 years: 67.2-349.4 ng/mL  
10 years: 79.5-400.3 ng/mL  
11 years: 92.6-452.6 ng/mL  
12 years: 105.3- 499.1 ng/mL  
13 years: 115.9-533.4 ng/mL  
14 years: 123.4-552.0 ng/mL  
15 years: 127.4-554.2 ng/mL  
16 years: 127.9-541.5 ng/mL  
17 years: 125.3-517.3 ng/mL  
18 years: 120.5-485.8 ng/mL  
19 years: 114.4-450.8 ng/mL  
20 years: 107.8-416.0 ng/mL  
21-25 years: 92.9-342.0 ng/mL  
26-30 years: 78.4-270.0 ng/mL  
31-35 years: 73.1-243.0 ng/mL

36-40 years: 69.0-227.0 ng/mL  
41-45 years: 61.5-204.4 ng/mL  
46-50 years: 56.8-194.5 ng/mL  
51-55 years: 53.0-189.6 ng/mL  
56-60 years: 45.6-172.4 ng/mL  
61-65 years: 42.2-169.0 ng/mL  
66-70 years: 38.3-162.5 ng/mL  
71-75 years: 36.6-164.7 ng/mL  
76-80 years: 34.7-164.8 ng/mL  
81-85 years: 34.4-172.4 ng/mL  
86-90 years: 33.6-177.8 ng/mL

Tanner stage reference intervals:

Males:

I: 81.3-255.3 ng/mL  
II: 106.2-432.3 ng/mL  
III: 244.9-511.4 ng/mL  
IV: 222.6-577.7 ng/mL  
V: 227.4-517.8 ng/mL

Females:

I: 85.9-323.0 ng/mL  
II: 117.5-451.3 ng/mL  
III: 258.3-528.5 ng/mL  
IV: 224.2-585.8 ng/mL  
V: 188.2-511.6 ng/mL

Tanner Stage reference source: Bindlingmaier M, Friedrich N, Emeny RT, et al. Reference intervals for insulin-like growth factor-1 (IGF-1) from birth to senescence: results from a multicenter study using a new automated chemiluminescence IGF-I immunoassay conforming to recent international recommendations. *J Clin Endocrinol Metab.* 2014;99(5):1712-1721

**Note:** Puberty onset (transition from Tanner stage I to Tanner stage II) occurs for boys at a median age of 11.5 (+/-2) years and for girls at a median age of 10.5 (+/-2) years. There is evidence that it may occur up to 1 year earlier in obese girls and in African American girls. For boys, there is no definite proven relationship between puberty onset and body weight or ethnic origin. Progression through Tanner stages is variable. Tanner stage V (young adult) should be reached by age 18.

### INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN 3

1-7 days: < or =0.7 mcg/mL  
8-14 days: 0.5-1.4 mcg/mL  
15 days-11 months: Unavailable  
1 year: 0.7-3.6 mcg/mL  
2 years: 0.8-3.9 mcg/mL  
3 years: 0.9-4.3 mcg/mL  
4 years: 1.0-4.7 mcg/mL  
5 years: 1.1-5.2 mcg/mL  
6 years: 1.3-5.6 mcg/mL  
7 years: 1.4-6.1 mcg/mL  
8 years: 1.6-6.5 mcg/mL

9 years: 1.8-7.1 mcg/mL  
10 years: 2.1-7.7 mcg/mL  
11 years: 2.4-8.4 mcg/mL  
12 years: 2.7-8.9 mcg/mL  
13 years: 3.1-9.5 mcg/mL  
14 years: 3.3-10 mcg/mL  
15 years: 3.5-10 mcg/mL  
16 years: 3.4-9.5 mcg/mL  
17 years: 3.2-8.7 mcg/mL  
18 years: 3.1-7.9 mcg/mL  
19 years: 2.9-7.3 mcg/mL  
20 years: 2.9-7.2 mcg/mL  
21-25 years: 3.4-7.8 mcg/mL  
26-30 years: 3.5-7.6 mcg/mL  
31-35 years: 3.5-7.0 mcg/mL  
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51-55 years: 3.4-6.8 mcg/mL  
56-60 years: 3.4-6.9 mcg/mL  
61-65 years: 3.2-6.6 mcg/mL  
66-70 years: 3.0-6.2 mcg/mL  
71-75 years: 2.8-5.7 mcg/mL  
76-80 years: 2.5-5.1 mcg/mL  
81-85 years: 2.2-4.5 mcg/mL

#### Tanner Stages:

##### Males

Stage I: 1.4-5.2 mcg/mL  
Stage II: 2.3-6.3 mcg/mL  
Stage III: 3.1-8.9 mcg/mL  
Stage IV: 3.7-8.7 mcg/mL  
Stage V: 2.6-8.6 mcg/mL

##### Females

Stage I: 1.2-6.4 mcg/mL  
Stage II: 2.8-6.9 mcg/mL  
Stage III: 3.9-9.4 mcg/mL  
Stage IV: 3.3-8.1 mcg/mL  
Stage V: 2.7-9.1 mcg/mL

**Note:** Puberty onset (transition from Tanner stage I to Tanner stage II) occurs for boys at a median age of 11.5 (+/-2) years and for girls at a median age of 10.5 (+/-2) years. There is evidence that it may occur up to 1 year earlier in obese girls and in African American girls. By contrast, for boys there is no definite proven relationship between puberty onset and body weight or ethnic origin. Progression through Tanner stages is variable. Tanner stage V (young adult) should be reached by age 18.

## Specimen Requirements:

<b>Patient Preparation:</b>	For 12 hours before specimen collection, patient <b>should not</b> take multivitamins or dietary supplements (eg, hair, skin, and nail supplements) containing biotin (vitamin B7)
<b>Collection Container/Tube:</b>	
<b>Preferred:</b>	Red top
<b>Acceptable:</b>	Serum gel
<b>Submission Container/Tube:</b>	2 Plastic vials
<b>Specimen Volume:</b>	1.6 mL Serum
<b>Collection Instructions:</b>	Centrifuge and aliquot serum into 2 plastic vials, each containing 0.8 mL of serum.
<b>Minimum Volume:</b>	0.5 mL

## Specimen Stability Information:

Specimen Type	Temperature	Time
Serum	Frozen (preferred)	14 days
	Ambient	72 hours
	Refrigerated	72 hours

## Cautions:

Insulin-like growth factor 1 (IGF-1) and insulin-like growth factor binding protein 3 (IGFBP-3) reference ranges are highly age dependent, and results must always be interpreted within the context of the patient's age.

Increased concentrations of IGF-1 are normal during pregnancy, however reference intervals on this population have not been formally established.

Discrepant IGF-1 and IGFBP-3 results can sometimes occur due to liver and kidney disease; however, this is uncommon and such results should alert laboratories and other healthcare professionals to the possible occurrence of a preanalytical or analytical error.

The use of biotin-containing supplements may lead to inaccurately reduced IGF-1 measurements.

Currently, IGF-1 or IGFBP-3 cannot be reliably used as risk indicators or prognostic markers in breast, colon, prostate, or lung cancer.

Insulin-like growth factor 1 and IGFBP-3 assays exhibit variability among platforms and manufacturers. Results obtained with different assay methods or kits should not be used interchangeably.

All immunometric assays can, on rare occasions, be subject to a hooking effect at extremely high analyte concentrations (falsely low results) or heterophilic antibody interference (most often falsely high results). If the laboratory result does not fit the clinical picture, these possibilities should be considered.

**CPT Code:**

83520

84305

**Day(s) Performed:** Monday through Friday**Report Available:** 1 to 3 days**Questions**

Contact Bethany Feind, Laboratory Resource Coordinator at 800-533-1710.