

# 2018 Antibody Building (Immunoglobulin IgG1) antigen binding glycoprotein

First Name: \_\_\_\_\_ Surname: \_\_\_\_\_ Group N° \_\_\_\_\_ Med Bio Chemistry

Task for practical studies : <http://aris.gusc.lv/06Daugavpils/Research/ImmunoGlobulASmed.doc>

Molecule viewers: ChemScape  RasMol  MAGE  ISIS Draw   Firefox v.3.5.5

at Display conditions: **Stick** (on Menu Stripe) **Ball & Stick** **Spacefill**

Atom Name	Symbol	Color	Valence Number
Carbon	C	Gray lightly or Black	4
Hydrogen	H	White	1
Oxygen	O	Red	2 (donor acceptor ligand up to 4)
Nitrogen	N	Bluish	3 + 1 (donor acceptor ligand up to 4)
Sulfur	S	Yellow	-2 , +6
Phosphor	P	Yellow Intensive dark	5 ( & 3 )
Sodium ion	Na <sup>+</sup>	Blue	+1 (coordination up to 6)
Magnesium ion	Mg <sup>2+</sup>	Green	+2 (coordination up to 6)
Calcium ion	Ca <sup>2+</sup>	Gray Dark	+2 (coordination up to 6)
Iron ion	Fe <sup>2+</sup>	Yellow Gray	+2 (coordination up to 6)
Iron ion	Fe <sup>3+</sup>	Yellow Gray	+3 (coordination up to 6)

the CPK color scheme 1965

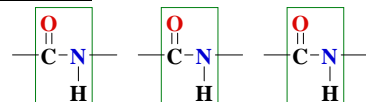
USA patent **Journal**

publication of scientists

**Corey, Pauling, Koltun**

for atomic modeling

Protein **Backbone** is **Ca trace**



Polypeptide of Amino Acids

Side chains: **Hydrophobic**

**Polar pH=7.36**

**Acidic-COO<sup>-</sup> negative**

**Basic-NH<sub>3</sub><sup>+</sup> positive**

Antigenic determined **A B AB O** blood groups: <http://aris.gusc.lv/06Daugavpils/Research/33BloodGroupABO.doc>

## 1. Using HomeWork : <http://aris.gusc.lv/06Daugavpils/Research/Amineac20LS.doc>

What 20 amino acids make up proteins call them using three letter and one letter Amino Acid abbreviations?

Which are simplest and largest amino acid of 20 write its molar mass g/mol?!

1	-	5	-	9	-	13	-	17	-
2	-	6	-	10	-	14	-	18	-
3	-	7	-	11	-	15	-	19	-
4	-	8	-	12	-	16	-	20	-

simplest .....largest .....

In Firefox3.5.5 <http://aris.gusc.lv/ChemFiles/ChimAntibodyMarz/INDEX.htm> choose of the

molecule **AntibodyMarz** home page and investigate **Immunoglobulin** molecule for

## Lysozime binding Anti-Body

2. How are made **backbone** of polypeptide sequence chains and which atom of amino acid is responsible for **backbone** trace formation? Point four **αCarbons** of Amino Acids and draw **Backbone trace** tetra peptide 3D

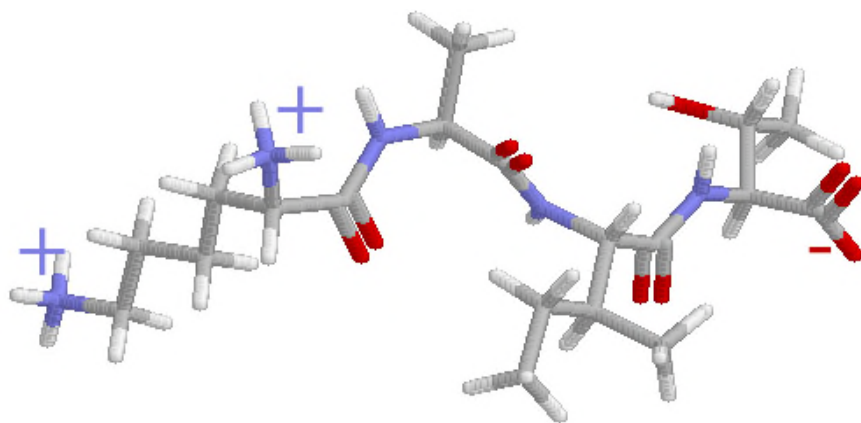
molecular model picture! Write the tetra

Peptide chain sequence using

three letter Amino Acid names

starting from **N-terminus** and

finishing with **C-terminus**!



H<sub>3</sub>N<sup>+</sup>.....

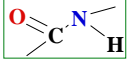
.....-COO<sup>-</sup>

Call terminus

**N-terminus** & **C-terminus** amino acid!

**N-terminus** Amino Acid:

**C-terminus** Amino Acid:

Draw inside frame-boxes  three peptide bonds for given tetra peptide molecular model picture!

3. What amino acid is **N-terminus** and **C-terminus** on **Light** chains? .....

4. What amino acid is **N-terminus** and **C-terminus** on **Heavy** chains? .....

5. How many amino acids constitute **Light** and **Heavy** chains? .....

6. What five intermolecular forces are known in biochemistry of life systems ?

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