

NAME: _____ Period: _____

Biochemical Comparisons and Molecular Clocks

Introduction: Mutation provides all *genetic* change. If mutation occurs when the DNA does not replicate perfectly. When a mutation occurs, a new allele is created. As a first approximation, these mutations are random (can occur at any location along the DNA). The rate of these mutations is relatively constant within a given species. If the mutation occurs in a critical location the result is usually disastrous. Other areas will accept change with no immediate consequence. Once made, the mutation is perpetual and heritable within the gene pool of the species if increased. Mutation adds variability to the gene pool.

Examine the amino acid sequences below which compare corresponding portions of hemoglobin molecules in humans and five other vertebrate animals. The sequence shown is only a small portion of the chain of 346 amino acids. The numbered columns indicate the position of each amino acid within the whole chain.

- Procedure:** 1. Look at each numbered column and circle the amino acids in each column that are different from the human amino acid for that column.
 2. Put an X in the blank under each numbered column in which all of the organisms have the same amino acid listed in that column.
 3. In the blanks on the right hand side of each row, identify how many amino acids were circles different from the human amino acids.

Table A: Comparing hemoglobin of a human to other vertebrates

	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
Human	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
Chimp	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
Orca	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
Rhino	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
Sheep	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
Human	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
Komodo	THR	LEU	SER	GLU	LEU	ASP	LYS	ASP	LYS	LEU	PHE	VAL	ASP	PRO	GLU	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

	103	104	105	106	107	108	109	110	111	112	113	114	115	116	
Human	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
Chimp	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
Orca	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
Rhino	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
Sheep	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
Human	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
Komodo	ASP	PHE	ARG	LEU	LEU	GLY	ASP	VAL	LEU	VAL	CYS	VAL	LEU	ALA	185
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

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Biochemical Evidence For Evolution Lab 26 Answer Key

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Biochemical Evidence For Evolution Lab

Thus, scientists use biochemical evidence (the amino acid sequence of proteins) to establish how organisms have evolved. Hemoglobin, a component of red blood cells, is one of the most widely studied of all proteins. In this activity, you will analyze the amino acid sequence of the hemoglobin protein in three species: human, horse and gorilla.

Student Work Evolution LAB#23: Biochemical Evidence of ...

Evidences for Evolution Lab Introduction: Unfortunately, we cannot repeat nature's experiments of evolution; however there is a vast amount of evidence, mostly indirect, to support the theory. If modern organisms descended from ancestral organisms then we should see similarities between organisms in the fossil record. Also, we should be able to see more similarities amongst different

Evidences for Evolution Lab - Mr. Ciardullo's Class Webpage

It shows how biochemical evidence contributes to the understanding of evolutionary processes. It also requires students to refer to the role of DNA in protein formation. Biochemical Evidence For Evolution If two organisms have similar DNA molecules, they have similar proteins. Similar proteins have similar amino acid sequences (orders).

iBlog Teacher Websites - Dearborn Public Schools

The study of evolution using homology consists of a classification method based on analysis of antigen-antibody complexes found in the blood. Using a modified Nuttall precipitation technique, students will identify the source of each sample. For safety, this activity uses five different simulated animal blood sera instead of the real thing. The Biochemical Evidence for Evolution Lab comes with enough materials for ten setups, a teacher's guide, and student copymaster.

Biochemical Evidence for Evolution Lab Activity | Boreal ...

September 30th, 2016 - Refuting evolution doesn't require complicated equations or lab experiments—though those do the job too. Just remember the two fundamental flaws we can use to show evolution to be not even scientifically viable. Evolutionists may never be persuaded by evidence alone since they interpret the "PowerPoint Presentation April 30th, 2018 - Evolution commons wikimedia.org ...

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Lab 26 Biochemical Evidence For Evolution Answers

The theory of evolution is supported by biochemical evidence; many of the same molecules and biochemical processes occur within all living organisms, from single-cell bacteria to humans. Originally, scientists couldn't understand how the process of evolution began, but they later discovered that RNA possesses catalytic properties.

What Biochemical Evidence Is There for Evolution?

The fossil record provides strong evidence for evolution. It shows us that evolutionary change tends to be gradual. It gives us physical proof of extinction, and of single species splitting into...

Evidence for Evolution | NOVA Labs | PBS

Origins and biochemical evidence. By studying the basic biochemistry shared by many organisms, we can begin to piece together how biochemical systems evolved near the root of the tree of life. However, up until the early 1980s, biologists were stumped by a "chicken and egg" problem: in all modern organisms, nucleic acids (DNA and RNA) are necessary to build proteins, and proteins are necessary to build nucleic acids - so which came first, the nucleic acid or the protein? This problem was ...

Origins and biochemical evidence - Evolution

Biochemical Evidence for Evolution Lab Activity. The study of evolution using homology consists of a classification method based on analysis of antigen-antibody complexes found in the blood. Using a modified Nuttall precipitation technique, students will identify the source of each sample.

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Directions for your Evolution Evidence in Amino Acid Sequences Lab. (B) Average fraction of interactors shared between pairs of paralogous proteins with no (n =4), low (n =10), and high (n =3) functional divergence (28). Chemists D. 8 - Biochemical Evidence 28:15. These MR-based findings were supported by biochemical analysis which showed evidence of dehydration and decreased content of ...

Biochemical Evidence For Evolution Lab 28

Lab Biochemical Evidence of Evolution Thus, scientists use biochemical evidence (the amino acid sequence of proteins) to establish how organisms have evolved. Hemoglobin, a component of red blood cells, is one of the most widely studied of all proteins. In this activity, you will analyze the amino acid sequence of the hemoglobin protein in three. This is also one of the factors in getting the software documents from this [Biochemical Evidence For Evolution Lab 26 Answer Key](#) online. You might not need more grow old to spend to go to the ebook creation as without difficulty as research for them. In some cases you achieve not uncover the notice Biochemical Evidence For Evolution Lab 26 Answer Key you are looking for. It will be totally wasting time.

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