

# CHAPTER 13 LAB FROM DNA TO PROTEIN SYNTHESIS ANSWER

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**What is the process of protein synthesis from DNA to protein?** During transcription, DNA is used as a template to make a molecule of messenger RNA (mRNA). The molecule of mRNA then leaves the nucleus and goes to a ribosome in the cytoplasm, where translation occurs. During translation, the genetic code in mRNA is read and used to make a polypeptide.

**What role do stop codons play in protein synthesis?** Stop Codons Mark the End of Translation The end of the protein-coding message is signaled by the presence of one of three codons (UAA, UAG, or UGA) called stop codons (see Figure 6-50).

**What is a codon in protein synthesis?** (KOH-don) A sequence of three consecutive nucleotides in a DNA or RNA molecule that codes for a specific amino acid. Certain codons signal the start or end of translation.

**What reads the DNA in protein synthesis?** Thus, the synthesis of a protein is governed by the information in its DNA, with the help of messengers (mRNA) and translators (tRNA). In the nucleus, DNA is transcribed to RNA. The mRNA carries the message out of the nucleus to the ribosome in the cytoplasm where the tRNA helps translate the message to make a protein.

**What are the 5 steps of protein synthesis in order?**

**What is the process of using DNA to make a protein called?** The journey from gene to protein is complex and tightly controlled within each cell. It consists of two major steps: transcription and translation. Together, transcription and translation are known as gene expression.

**How does DNA code for proteins?** Like words in a sentence, the DNA sequence of a gene determines the amino acid sequence for the protein it encodes. In the protein-coding region of a gene, the DNA sequence is interpreted in groups of three nucleotide bases, called codons. Each codon specifies a single amino acid in a protein.

**How many codons make up your protein?** There are 64 different codons: 61 specify amino acids and 3 are used as stop signals.

**How to identify start and stop codons?** A start codon interacts with initiation factors or nearby sequences to initiate the translation process. A stop codon can individually initiate the termination. The standard start codon is AUG. The standard stop codon is UAG, UGA and UAA.

**What do ribosomes do in protein synthesis?** Definition. A ribosome is an intercellular structure made of both RNA and protein, and it is the site of protein synthesis in the cell. The ribosome reads the messenger RNA (mRNA) sequence and translates that genetic code into a specified string of amino acids, which grow into long chains that fold to form proteins.

**Where does protein synthesis take place?** Ribosomes are the sites in a cell in which protein synthesis takes place. Cells have many ribosomes, and the exact number depends on how active a particular cell is in synthesizing proteins.

**What are the steps of translation in protein synthesis?**

**What are proteins made of?** Proteins are made of amino acids. Proteins are made up of amino acids containing mostly hydrogen, carbon, nitrogen and oxygen, as linked together in chains. The linear number and order of amino acids are coded in genes, a segment of DNA. Proteins contain 20 different amino acids classified by properties.

**How many bases make up a codon?** A codon consists of 3 bases and there are 4 different kinds of bases in a nucleic acid altogether.

**How do cells make proteins?** Proteins are the key working molecules and building blocks in all cells. They are produced in a similar two-step process in all organisms

called protein synthesis – DNA is first transcribed into RNA, then RNA is translated into protein.

**What is the function of a codon?** A protein is made from a long chain of amino acids. A codon can instruct the cell to start creating a protein chain, to add a specific amino acid to the growing protein chain, or to end the protein chain. The full set of codons is called the genetic code.

**Which RNA carries the message?** Messenger RNA (mRNA) carries the instructions from DNA that specify the correct order of amino acids during protein synthesis during translation.

**Does transcription make DNA into RNA?** All of the RNA in a cell is made by DNA transcription, a process that has certain similarities to the process of DNA replication discussed in Chapter 5. Transcription begins with the opening and unwinding of a small portion of the DNA double helix to expose the bases on each DNA strand.

**What is the process of DNA to protein synthesis?** Starting in the nucleus, we see how the DNA code is converted to messenger RNA by the process of transcription. We then follow the messenger RNA into the cytoplasm where it is bound by protein factories, called ribosomes. The ribosomes read the messenger RNA to produce a chain of amino acids.

**Which step of protein synthesis comes first?** The first step in protein synthesis is called transcription. Transcription is the process wherein DNA is used to create messenger RNA, or mRNA. The mRNA is produced using DNA's code, which is contained within the cell's nucleus.

**Does all DNA code for proteins?** Only about 1 percent of DNA is made up of protein-coding genes; the other 99 percent is noncoding. Noncoding DNA does not provide instructions for making proteins. Scientists once thought noncoding DNA was “junk,” with no known purpose.

**What are the steps of the DNA sequence to protein?** Starting in the nucleus, we see how the DNA code is converted to messenger RNA by the process of transcription. We then follow the messenger RNA into the cytoplasm where it is bound by protein factories, called ribosomes. The ribosomes read the messenger

RNA to produce a chain of amino acids.

**What process converts the message of DNA into a protein?** How does the cell convert DNA into working proteins? The process of translation can be seen as the decoding of instructions for making proteins, involving mRNA in transcription as well as tRNA.

**What is the process of synthesizing a protein called?** Protein biosynthesis (or protein synthesis) is a core biological process, occurring inside cells, balancing the loss of cellular proteins (via degradation or export) through the production of new proteins. Proteins perform a number of critical functions as enzymes, structural proteins or hormones.

**What is the process of replication in protein synthesis?** Replication is the process in which a cell makes an exact copy of its own DNA (copy DNA → DNA). Replication occurs in the S-phase in preparation to cell division during which the genetic information for the synthesis of proteins is transferred from the mothercell to the daughtercell.

**What is a Space Marine codex?** An essential tome for the Imperium's elite Space Marine Chapters. 216 pages of extensive rules, inspiring artwork, and Adeptus Astartes lore. Includes Crusade and Combat Patrol rules, a massive 93 datasheets, seven themed Detachments, and loads more.

**Is the Space Marines codex worth it?** Codex Chaos Space Marines Verdict Still, overall this codex is pretty awesome and is going to be dueling with the top armies for a while. CSMs do a lot of things well as a faction, combining fast movement, good brawling, and powerful shooting.

**Is there a 10th edition Space Marine codex?** Codex: Space Marines 10th Ed (English) Product Description This book also contains a one-use code to unlock Codex: Space Marines content in Warhammer 40,000: The App.

**Will Space Marines get a new codex?** We're on the verge of the Chaos Space Marine Codex hitting shelves (officially, the release date in stores is May 25, 2024). After that, GW stated that the Genestealer Cults and the Adepta Sororitas are up next for Summer 2024.

**Who doesn't follow the codex Astartes?** The Space Wolves strongly resist the central command structure of the Imperium. The sons of Leman Russ never fully bowed to the dictates of the Codex and certainly do not now. Theirs is a philosophical deviance.

**Who opposed the codex Astartes?** While most chapters in subsequent foundings were made from the Ultramarines' gene-stock and favored the Codex Astartes' heraldry, chapters like the Space Wolves, Blood Angels, Dark Angels, and Deathwatch do not and opt for their own structures.

**Are blood angels in the Space Marine codex?** The brand new Codex Supplement: Blood Angels will be available in this box first, featuring an exclusive cover, and you'll also get a set of datacards covering all 18 datasheets in the book. Alongside the new and updated units, there are Detachments expanding on the options found in Codex: Space Marines.

**Why are Space Marines so powerful?** In the fictional universe of Warhammer 40,000, the Space Marines, also known as the Adeptus Astartes, are superhuman warriors who fight for the Imperium of Man. They wear mechanised suits of armour and have modified genomes that grant them superhuman strength and endurance.

**Is it rare to see Space Marines?**

**Do you need to buy codex 40K?** If you want to get into the game as a beginner these free rules are the only version you need. Pick up the hefty Warhammer 40K Core Book and your army's codex later, if you feel you really want to and/or can afford them.

**Do Ultramarines have a codex supplement?** Since the release of the Imperium Nihilus: Vigilus Defiant book, a number of the rules presented there have been superseded by those found in Codex Supplement: Ultramarines.

**How big is the codex?** The codex's bookbinding is wooden boards covered in leather, with ornate metal guards and fittings. At 92 cm (36 in) long, 50 cm (20 in) wide and 22 cm (8.7 in) thick, it is the largest known medieval manuscript.

**Are Primaris still Astartes?** Though they now stand a step above their Firstborn Astartes brethren, all Primaris Space Marines are still created using the original gene-seed of one of the Loyalist primarchs, like all other members of the Adeptus Astartes.

**Do Space Marines stay in their armor?** As all of the connections in the skinsuit and the black carapace fire up, the Space Marine's eyes dilate, and the warrior becomes one with his armour. It becomes practically weightless to him – and thanks to some pretty advanced life support systems, he can stay in his armour nearly indefinitely if needed.

**Can Space Marines get old?** Space Marines are not immortal, but they age extremely slow. The oldest known was one stranded over 10,000 years old and was functionally immobile. Dante is over 1500. The Hrud will age Space Marines to death, one was aged over 3000 years which caused significant pain but could still fight.

**Why do the Black Templars hate the Codex Astartes?** Sigismund refused to adhere to the Codex Astartes, seeing the foundational treatise written by Roboute Guilliman as an insult to the teachings of his own Primarch, Rogal Dorn. Instead, he led his warriors into the depths of space, taking the war directly to the enemies of the Imperium.

**Who is the oldest Astartes?** The oldest non-chaos, non-dreadnought living Astartes is Dante of the Blood Angels, born in 447. M40.

**Why are all Astartes male?** Because there is a legitimate lore reason. Primarchs were all male; space marines are created using their gene seed and it reacts poorly to being implanted into a female.

**Do the Ultramarines follow the Codex Astartes?** Codex Astartes was written and formalised after the Horus Heresy by the Primarch of the Ultramarines Legion, Roboute Guilliman. Some Chapters, such as the Ultramarines and their Successor Chapters, regard the Codex as a holy text, and follow it without question.

**Do the GREY Knights follow the Codex Astartes?** Additionally, the Grey Knights do not follow the tenets of the Codex Astartes in the matter of force organisation.

**Does Guilliman rule the Imperium?** Roboute Guilliman, known as the 'Avenging Son,' 'The Victorious,' 'The Master of Ultramar,' and 'The Blade of Unity,' is the Ultramarines Space Marine Legion's primarch. As the current lord commander of the Imperium and ruling Imperial Regent, he's recognized for his exceptional intelligence, reason, and will.

**Do the Dark Angels have a primarch?** Lion El'Jonson, Primarch of the Dark Angels, has returned from the annals of history in humanity's time of greatest need.

**Do the Dark Angels follow the Codex Astartes?** Other Chapters, like the Dark Angels, have relatively minor variations in their organization and ways of fighting. Yet others, like the Space Wolves, simply ignore the organization presented in the Codex Astartes and follow their own ways.

**Do Space Marines drink blood?**

**What does a codex do in Warhammer?** Codex supplements provide additional rules for sub-factions of a parent army. These might include special characters or units and other special rules that are only available to that particular sub-faction.

**Do I need a codex for 40K?** Pick up the hefty Warhammer 40K Core Book and your army's codex later, if you feel you really want to and/or can afford them. But they're by no means essential - not in the current edition of the game, which is deliberately designed to lower these barriers to entry.

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**What is the Space Marine Codex Angels of Death?** Codex: Angels of Death is a supplement which details the history, organizational structure and character of the Blood Angel and Dark Angel Space Marine chapters, and includes rules that cover the style, weapons and capabilities of both groups.

**Do ultramarines have a codex supplement?** Since the release of the Imperium Nihilus: Vigilus Defiant book, a number of the rules presented there have been superseded by those found in Codex Supplement: Ultramarines.

**What is Khorne Warhammer?** Khorne is the Chaos God of wrath who draws his power both from the bloodstained battlefields of the Mortal Realms and from the anger innate in all mortals.

**What is a librarian in Warhammer?** Librarians are the psychic specialists of the Space Marine Legions, channelling the fury of the Immaterium into bolts of lightning, gouts of searing flame, and all manner of spectacular supranormal techniques.

**Is Warhammer 40k Standard legal?** Description. There are 168 different cards printed in the Warhammer 40,000 Commander Decks. These cards are legal for play in the Commander, Vintage, and Legacy formats. They aren't legal for play in the Standard, Pioneer, or Modern formats.

**Can I use Horus Heresy Space Marines in 40k?** The Legends of the Horus Heresy Get Downloadable Rules for Warhammer 40,000. The new Legends of The Horus Heresy rules, released today, allow players to use miniatures from Warhammer: Horus Heresy in games of Warhammer 40,000.

**How do I redeem my Warhammer 40k Codex?** You'll find a unique Warhammer 40k Codex code in the back of each printed Codex. You can register this code on your MyWarhammer account, which will in turn unlock all the datasheets and Detachments from the Codex in the Warhammer 40k app. You can then use that data in the Battle Forge army builder.

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**Are the Ultramarines a legion?** The Ultramarines were originally the XIIIth Space Marine Legion before the reforms that initiated the Second Founding and reshaped the Imperium after the Heresy in the Time of Rebirth on the orders of Guilliman himself as the lord commander of the Imperium and Imperial Regent.

## **Sulzer Pump Curves: A Comprehensive Guide**

### **What are Sulzer pump curves?**

Sulzer pump curves are graphical representations that illustrate the performance characteristics of a specific pump model under various operating conditions. They typically display the relationship between the flow rate (Q) and the pressure head (H) generated by the pump at different speeds.

### **What information can I find on a Sulzer pump curve?**

Pump curves provide essential information about a pump's performance, including:

- **Flow rate:** The volume of fluid discharged by the pump per unit time, expressed in gallons per minute (GPM) or cubic meters per hour (m<sup>3</sup>/h).
- **Pressure head:** The height to which the pump can raise a column of water, expressed in feet (ft) or meters (m).
- **Efficiency:** The ratio of the power output to the power input, indicating how efficiently the pump operates.
- **NPSH required:** The minimum pressure required at the pump inlet to prevent cavitation, expressed in feet (ft) or meters (m).

### **How do I interpret a Sulzer pump curve?**

To interpret a pump curve, follow these steps:

1. Identify the operating range of the pump at a specific speed by examining the intersection of the curve with the desired flow rate.
2. Determine the pressure head generated by the pump at that flow rate by reading the corresponding value on the vertical axis.
3. Consult the efficiency curve to find the corresponding efficiency value at the operating point.
4. Verify that the NPSH required is less than the available NPSH at the pump inlet to avoid cavitation.

### **What factors affect Sulzer pump curves?**

The shape and characteristics of pump curves depend on several factors, including:

- Pump type (e.g., centrifugal, positive displacement)
- Impeller diameter and geometry
- Number of stages
- Fluid properties (e.g., density, viscosity)

### **How are Sulzer pump curves used?**

Pump curves play a crucial role in pump selection and system design. They help engineers:

- Determine the appropriate pump for specific flow rate and pressure head requirements.
- Optimize pump performance by selecting the correct operating point.
- Avoid cavitation and other potential pump problems by ensuring adequate NPSH.

**What are the two main ways that international business hurt Canada?** What are the two main ways that international business hurts Canadians? Loss of Culture and Identity and Increased foreign ownership of companies in Canada. 2. Why is U.S culture so dominant in Canada?

**Why international business in Canada?** Territorial Tax System: Canada operates under a territorial tax system, meaning foreign profits are not subject to repatriation taxes. It incentivises foreign businesses to invest and expand their operations in Canada, knowing they can repatriate their profits without additional tax burdens.

**What are the major challenges of doing business in Canada?** Canada's subtle, but important market differences, from the United States include restrictions or inaccessibility of imports in some sectors, differing provincial regulations and sales channels, bilingual labeling and packaging requirements, certification standards, and Canadian customs procedures.

**What is Canada's role in international trade?** While Canadians represent just 0.5% of the world's population, Canada accounts for roughly 2.5% of global merchandise exports. Two-way goods and services trade accounts for approximately 65% of Canada's GDP. Foreign direct investment is also a key factor in Canada's productivity.

**Why is it hard to do business in Canada?** Some of the challenges associated with trading across borders in Canada include the following: complex customs and border procedures, which can involve delays and costs such as brokerage fees, inspection charges, etc; logistics and supply chain complexities due to large distances and the geography of the country; ...

**What are Canada's top 3 exports to the US?** Bilateral Trade by Products The main products exported from Canada to United States were Crude Petroleum (\$117B), Cars (\$27B), and Petroleum Gas (\$22.4B).

**What is Canada's #1 export?** Yearly Trade The most recent exports are led by Crude Petroleum (\$123B), Cars (\$29.4B), Petroleum Gas (\$24.3B), Refined Petroleum (\$17.2B), and Gold (\$14.7B).

**What is the Canadian way of doing business?** Canadian businesspeople are conservative in manner, speech, and dress. Business customs are similar to those in the U.S. or the U.K., but etiquette is very important. Excessive body contact, gestures in greeting, or loud conversation generally are frowned upon.

**What is an advantage of doing business in Canada?** When compared to a country like the US, Canada has a reasonable stable economy which will prevent you from the risks of business shutdown. Some of the reasons for this economic stability are low tax rates, freedom to do trade and the well-managed bureaucracy.

**What are common business practices in Canada?** Business meetings in Canada tend to be more formal than in the United States. Having small talk at the beginning of the meeting is common. Presentations should be short and clear, and it is important to use facts and figures during business meetings.

**What role does Canada play in the international organization?** As a founding member of the United Nations (UN), Canada is committed to the guidance provided in the UN Charter to maintain international peace and security, develop friendly relations among nations, and to achieve international co-operation in solving international problems of an economic, social, cultural or ...

**What are the three main types of industry in Canada?** Canada's economy includes which three main industries? Service, manufacturing and natural resource industries.

**What is Canada's biggest import?**

**What are 2 trade barriers for Canada?** Particularly high tariffs for certain products. Restrictions on selling to the government of the country. Import licensing requirements. Anti-dumping and countervailing duty measures.

**What are international threats to Canada?** Canada's critical infrastructure (CI) faces many national security threats, including hostile activities by state actors, terrorism, violent extremism, cyber incidents, climate change and health threats such as infectious diseases.

**What are two disadvantages of foreign investment in Canada?**

**What are the threats to Canadian business?** Year-over-year, Canada's top three risks have changed only slightly. In 2023, cyber incidents (35%), the skilled workforce shortage (33%) and climate change (29%) were deemed the top risks.

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