**ENZYME MATCHING CHALLENGE**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Block: \_\_\_\_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ENZYME** | **SOURCE and Optimal pH** | **SUBSTRATE** | **PRODUCT** | **REACTION** |
| **LIPASES** |  |  |  |  |
| **PEPSIN** |  |  |  |  |
| **SALIVARY**  **AMYLASE**  **(Ptyalin)** |  |  |  |  |
| **TRYPSIN** |  |  |  |  |
| **ENZYME** | **SOURCE and Optimal pH** | **SUBSTRATE** | **PRODUCT** | **REACTION** |
| **MALTASE** |  |  |  |  |
| **NUCLEASES** |  |  |  |  |
| **PEPTIDASES** |  |  |  |  |
| **NUCLEOSIDASES** |  |  |  |  |
| **PANCREATIC**  **AMYLASE** |  |  |  |  |

**Source and Optimal pH**

|  |  |
| --- | --- |
| **1.** | **PANCREAS**  **pH =**  **7.5 🡪8.5** |
| **2** | **STOMACH**  **(Gastric Glands)**  **pH =**  **2 🡪3** |
| **3** | **PANCREAS**  **pH =**  **7.5 🡪8.5** |
| **4** | **DUODENUM**  **pH =**  **7.5 🡪8.5** |
| **5** | **Sublingual/**  **Parotid/**  **Submandibular**  **pH = 7** |
| **6** | **PANCREAS**  **pH =**  **7.5 🡪8.5** |
| **7** | **DUODENUM**  **pH =**  **7.5 🡪8.5** |
| **8** | **PANCREAS**  **pH =**  **7.5 🡪8.5** |
| **9** | **DUODENUM**  **pH =**  **7.5 🡪8.5** |

**SUBSTRATE**

|  |  |
| --- | --- |
| **1.** | **SMALL**  **PEPTIDE**  **CHAINS** |
| **2** | **NUCLEOTIDES** |
| **3** | **DNA/RNA**  **(Nucleic Acids)** |
| **4** | **PROTEINS** |
| **5** | **MALTOSE** |
| **6** | **STARCH** |
| **7** | **TRIGLYCERIDES**  **(FATS)** |
| **8** | **STARCH** |
| **9** | **PROTEINS** |

**PRODUCT**

|  |  |
| --- | --- |
| **1.** | **AMINO ACIDS** |
| **2** | **NUCLEOTIDES** |
| **3** | **PHOSPHATE,**  **PENTOSE SUGAR &**  **NITROGENOUS  BASE** |
| **4** | **SMALL**  **PEPTIDE**  **CHAINS** |
| **5** | **GLUCOSE**  **Molecules** |
| **6** | **SMALL**  **PEPTIDE**  **CHAINS** |
| **7** | **MALTOSE** |
| **8** | **MALTOSE** |
| **9** | **GLYCEROL**  **&**  **FATTY ACIDS** |

**REACTION IMAGES**

|  |  |
| --- | --- |
| **1** | [Image result for triglyceride hydrolysis](http://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwism82Ck73XAhVBImMKHW0gAwgQjRwIBw&url=http://www.mdpi.com/1422-0067/17/12/1968&psig=AOvVaw0VSkH18YboQ0umiwIo9Gyi&ust=1510717250576016) |
| **2** | [Image result for hydrolysis of peptide bond](https://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjk1oeulb3XAhVRwWMKHXwWAUoQjRwIBw&url=https://www.buzzle.com/articles/pepsin-enzyme-structure-function-and-important-facts.html&psig=AOvVaw2Br-6BGPFGUeWt-uJT-bGe&ust=1510718009807426) |
| **3** | [Image result for hydrolysis of starch into maltose](http://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwieiIb-k73XAhWEKGMKHU04A9AQjRwIBw&url=http://legacy.sciencelearn.org.nz/Contexts/Digestion-Chemistry/Looking-Closer/Digestive-enzymes&psig=AOvVaw0gvb_mHBj6uQTo7Qt8eJ1i&ust=1510717645924192) |
| **4** | [Image result for nucleotide](http://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwiNuYytl73XAhVQxWMKHV9VBFMQjRwIBw&url=http://www.chem.ucla.edu/harding/IGOC/N/nucleotide.html&psig=AOvVaw2Z5v-Up4XUsrm_LDHM4-kc&ust=1510718544529009) [Image result for components of a nucleotide](http://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwisr53xlr3XAhVJ8WMKHRd9B3AQjRwIBw&url=http://study.com/academy/lesson/dna-and-the-chemical-structure-of-nucleic-acids.html&psig=AOvVaw1dO0XD9yaEcEMBFrpJB5o4&ust=1510718419291785) |
| **5** | [Image result for protein into peptide chains](https://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjJ6ZrgmL3XAhVJ0GMKHQCzB8wQjRwIBw&url=https://www.quora.com/What-is-the-end-product-of-protein-digestion-How-does-that-differ-from-carbohydrates-and-fats&psig=AOvVaw1PYiNFwzsBY0GWmvKnrEKe&ust=1510718913012176) |
| **6** | [Image result for starch to maltose reaction](https://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjgsvDqlL3XAhVSy2MKHX6mDcoQjRwIBw&url=https://en.wikipedia.org/wiki/Maltose&psig=AOvVaw21QsCXL7j14RuGTy45gBpX&ust=1510717881906808) |
| **7** | [Image result for protein into peptide chains](https://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjJ6ZrgmL3XAhVJ0GMKHQCzB8wQjRwIBw&url=https://www.quora.com/What-is-the-end-product-of-protein-digestion-How-does-that-differ-from-carbohydrates-and-fats&psig=AOvVaw1PYiNFwzsBY0GWmvKnrEKe&ust=1510718913012176) |
| **8** | [Image result for synthesis of nucleic acids](http://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjM-PO3m73XAhUJ62MKHVClDr0QjRwIBw&url=http://myhome.sunyocc.edu/~weiskirl/nucleotides_nucleicacid.htm&psig=AOvVaw1EwguVW74O2Lvok1EaT9lk&ust=1510719582616804) |
| **9** | [Image result for starch to maltose reaction](https://www.google.ca/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjgsvDqlL3XAhVSy2MKHX6mDcoQjRwIBw&url=https://en.wikipedia.org/wiki/Maltose&psig=AOvVaw21QsCXL7j14RuGTy45gBpX&ust=1510717881906808) |