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|  | **华中农业大学** |
| **2019年食品科技学院研究生入学复试面试题** |

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**试题编号：1**

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| **翻译** | All proteins are essentially made up of the same primary 20 amino acids; however, some proteins may not contain one or a few of the 20 amino acids. The differences in structure and function of these thousands of proteins arise from the sequence in which the amino acids are linked together via amide bonds. Literally, billions of proteins with unique properties can be synthesized by changing the amino acid sequence, the type and ratio of amino acids, and the chain length of polypeptides. |
| **1** | The discovery of the adventitious formation of the potential cancer-causing agent acrylamide （丙烯酰胺）in a variety of foods during cooking has raised much concern, but the chemical mechanism(s) governing its production are unclear. Here we show that acrylamide can be released by the thermal treatment of certain amino acids, particularly in combination with reducing sugars, and of early Maillard reaction products(麦拉德反应). |
| **2** | High-amylose starch is in great demand by the starch industry for its unique functional properties. However, very few high-amylose crop varieties are commercially available. In this paper we describe the generation of very-high-amylose potato starch by genetic modification. Normal, high-molecular-weight amylopectin was absent, whereas the amylose content was increased to levels comparable to the highest commercially available maize starches. And starch granule morphology and composition were noticeably altered. |
| **3** | Starch is the major storage carbohydrate in plants and one of the most important plant raw materials for both food and industrial applications. Approximately 70% of the European and US starch production is used for industrial purposes, whereas about 30% is used as native starch for direct human and animal consumption. The range of starch applications is heavily influenced by the ratio of its two major components, essentially linear amylose and branched amylopectin. |
| **4** | In the past few years, there has been growing interest in composite systems such as emulsion gels because of their practical applications in food formulations（配方）. Because of their flexibility and amphiphilic（两亲性）nature, globular proteins such as whey proteins rapidly adsorb to the emulsion（乳胶） interface, where they self-aggregate and form continuous and homogeneous(均匀的) membranes around oil droplets through intermolecular（间）） β-sheet interactions. |

**备注：学术型硕士1和2是必答题；再从3和4中任选一题作答**

**专业型硕士3和4是必答题；再从1和2中任选一题作答**