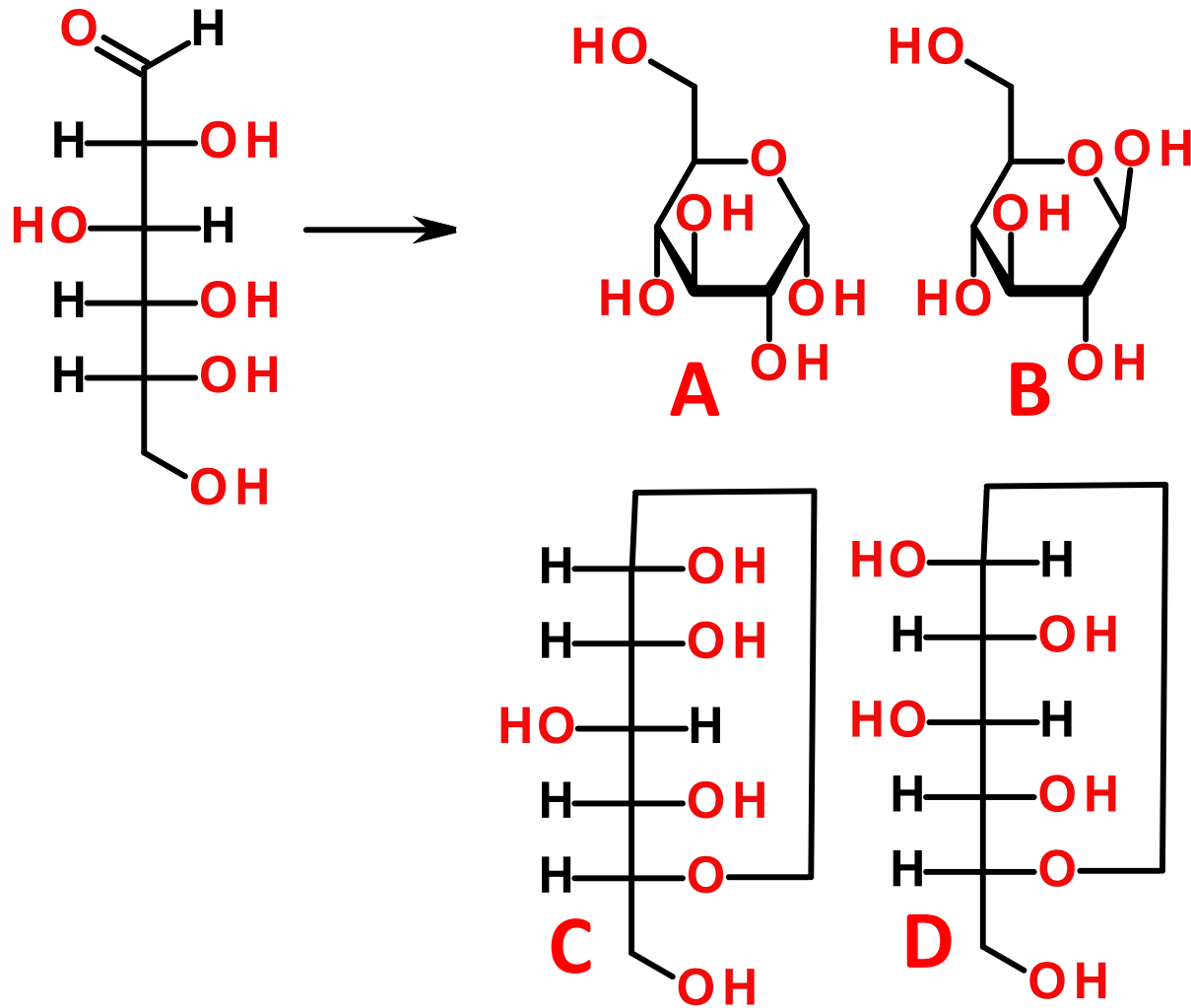
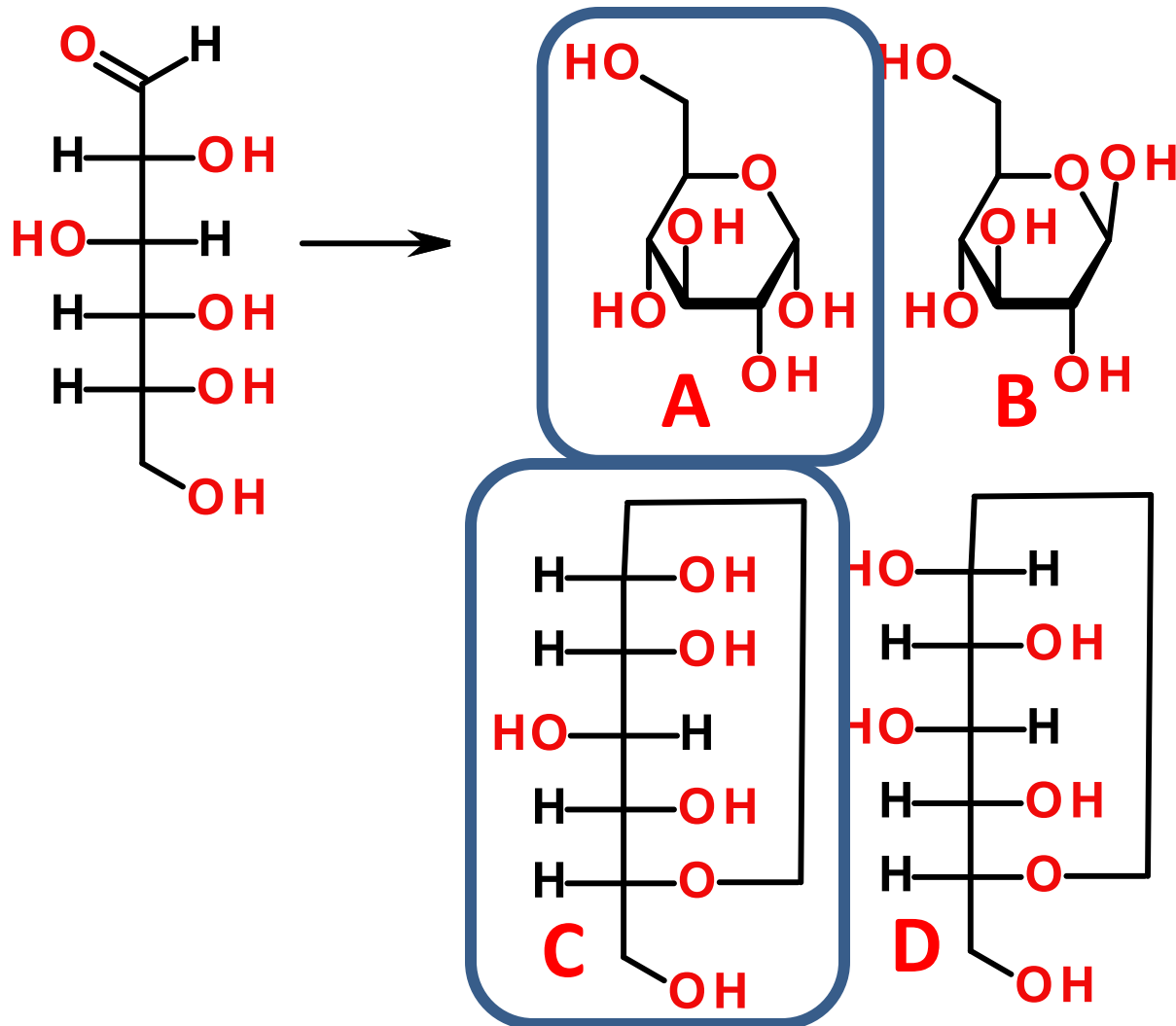


Give the minor product of the following reaction. **2016-11-16 Q1**




Give the minor product of the following reaction. **2016-11-16 Q1**



# Exam 4 (Cumulative Exam)

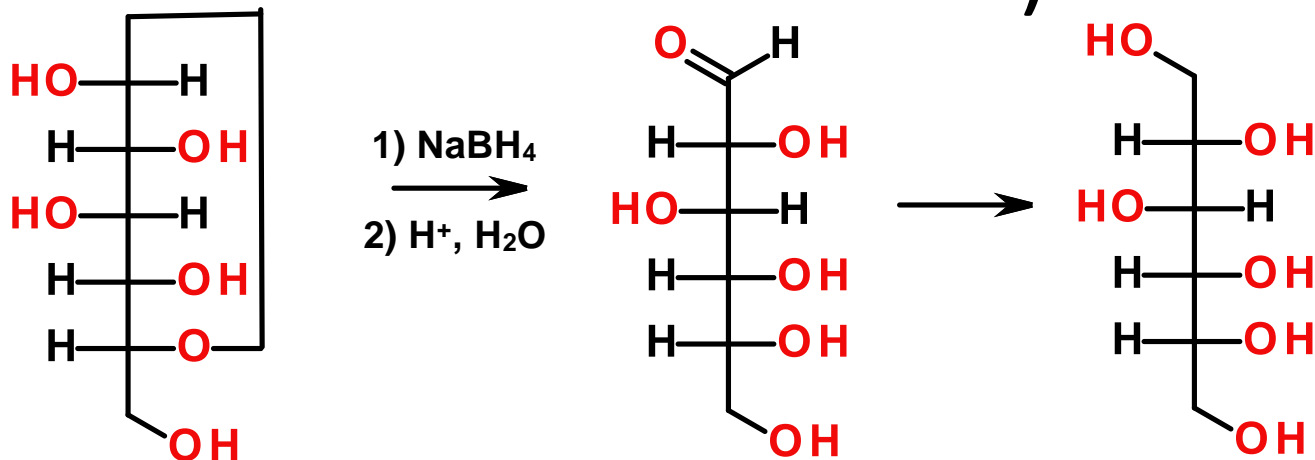
- **Time:**
  - Thursday, December 8: 2:00 – 4:00PM OR
  - Saturday, December 10: 10:00 am – Noon OR
  - Saturday, December 10: 1:00 – 4:00PM
- **Location – Soc/Anthro Testing Center**
  - Chapters will be covered in this order: Chapter 18, 19, 20
- **Practice Exams are Posted**
  - Ex4-90A Practice Final Exam
  - Ex4-90B Practice Final Exam
- **Deadline for alternate arrangements is Monday, 12/5/2016 at 4:30 PM (i.e., close of business)**
  - An oral make-up exam will be required for making up the exam for all students not taking the exam on the above dates or having already made prior arrangements

| Assignment                                  | Due Date                     |   |
|---|------------------------------|---|
| Ex4-01-B7-18-06B Claisen Condensation       | Friday, November 11, 2016    |   |
| Ex4-02-B7-18-06C Claisen Condensation       | Saturday, November 12, 2016  |   |
| Ex4-03-B7-18-08B A-B Unsaturated Rxns       | Sunday, November 13, 2016    | Changed Dates!!!!   |
| Ex4-04-B7-18-08C A-B Unsaturated Rxns       | Monday, November 14, 2016    |   |
| Ex4-05-B7-18-09A Carb Classification        | Tuesday, November 15, 2016   |   |
| Ex4-06-B7-19-01 Hemiacetal Formation        | Sunday, November 27, 2016    |  |
| Ex4-07-B7-19-02 Carbohydrate Reactions      | Sunday, November 27, 2016    |   |
| Ex4-08-B7-19-02 Kiliani-Fischer Synthesis   | Sunday, November 27, 2016    |   |
| Ex4-09-B7-19-03 Important Carbohydrates     | Monday, November 28, 2016    |   |
| Ex4-10-B7-19-04 Carbs in Blood Types        | Monday, November 28, 2016    |   |
| Thanksgiving Break                          |                              |   |
| Ex4-11-B7-20-01 Amino Acid Nomenclature     | Tuesday, November 29, 2016   |   |
| Ex4-12-B7-20-01B Amino Acid Naming          | Wednesday, November 30, 2016 |   |
| Ex4-13-B7-20-02 Amino Acid Acid Base        | Thursday, December 1, 2016   |   |
| Ex4-14-B7-20-03 Edmann Degradation          | Friday, December 2, 2016     |   |
| Ex4-15-B7-20-04 Merrified Peptide Synthesis | Saturday, December 3, 2016   |   |
| Ex4-16-B7-20-05 Synthesis in Peptides       | Sunday, December 4, 2016     |   |

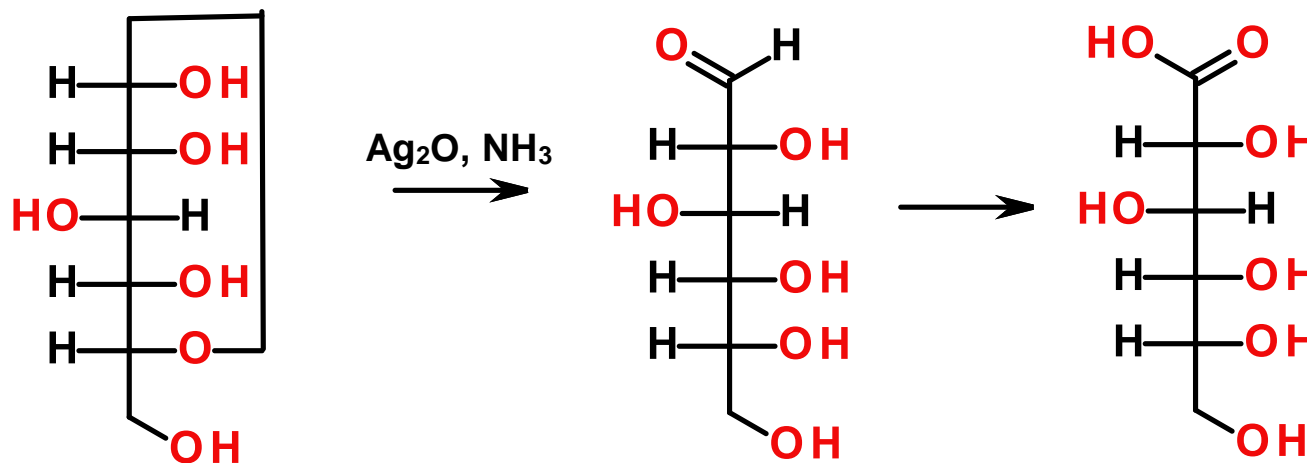
No Chem 234 Class Friday

No Chem 236 Lab Thursday, Friday, this week and Monday after spring break

# Reactions of Carbohydrates (Fischer Version)



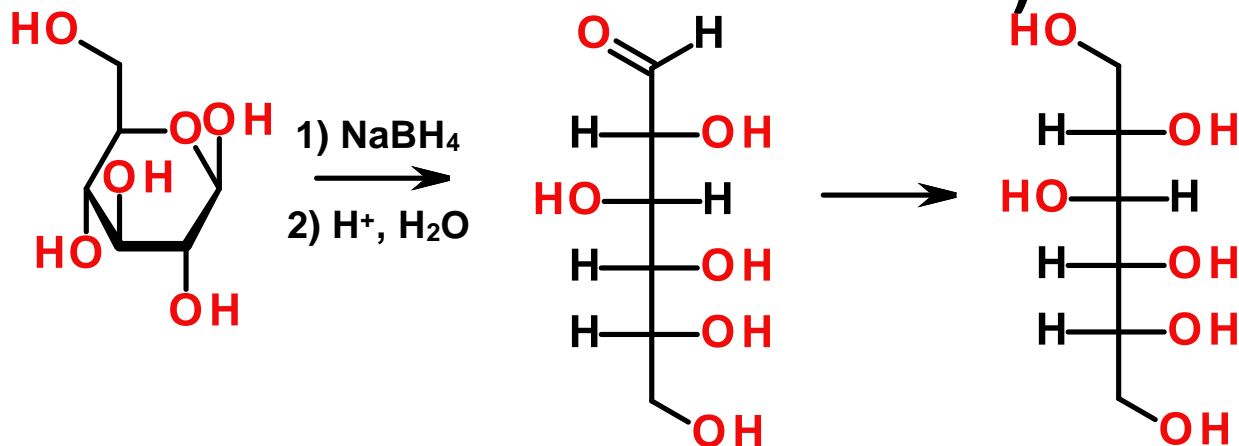
Doesn't matter if it is  $\beta$ - or  $\alpha$ -, since goes to the aldehyde



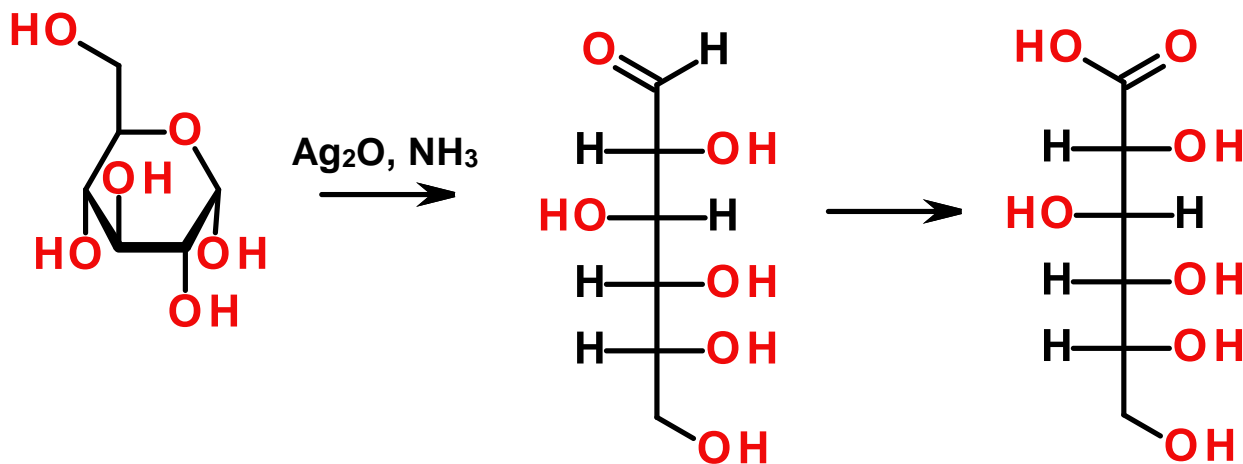
Tollen's Reagent  
sometimes written as  $\text{Ag}(\text{NH}_3)_2^+$

All aldehyde reagents can react with these hemiacetals, since the hemiacetals are in equilibrium with the aldehyde.

# Reactions of Carbohydrates (Haworth Version)



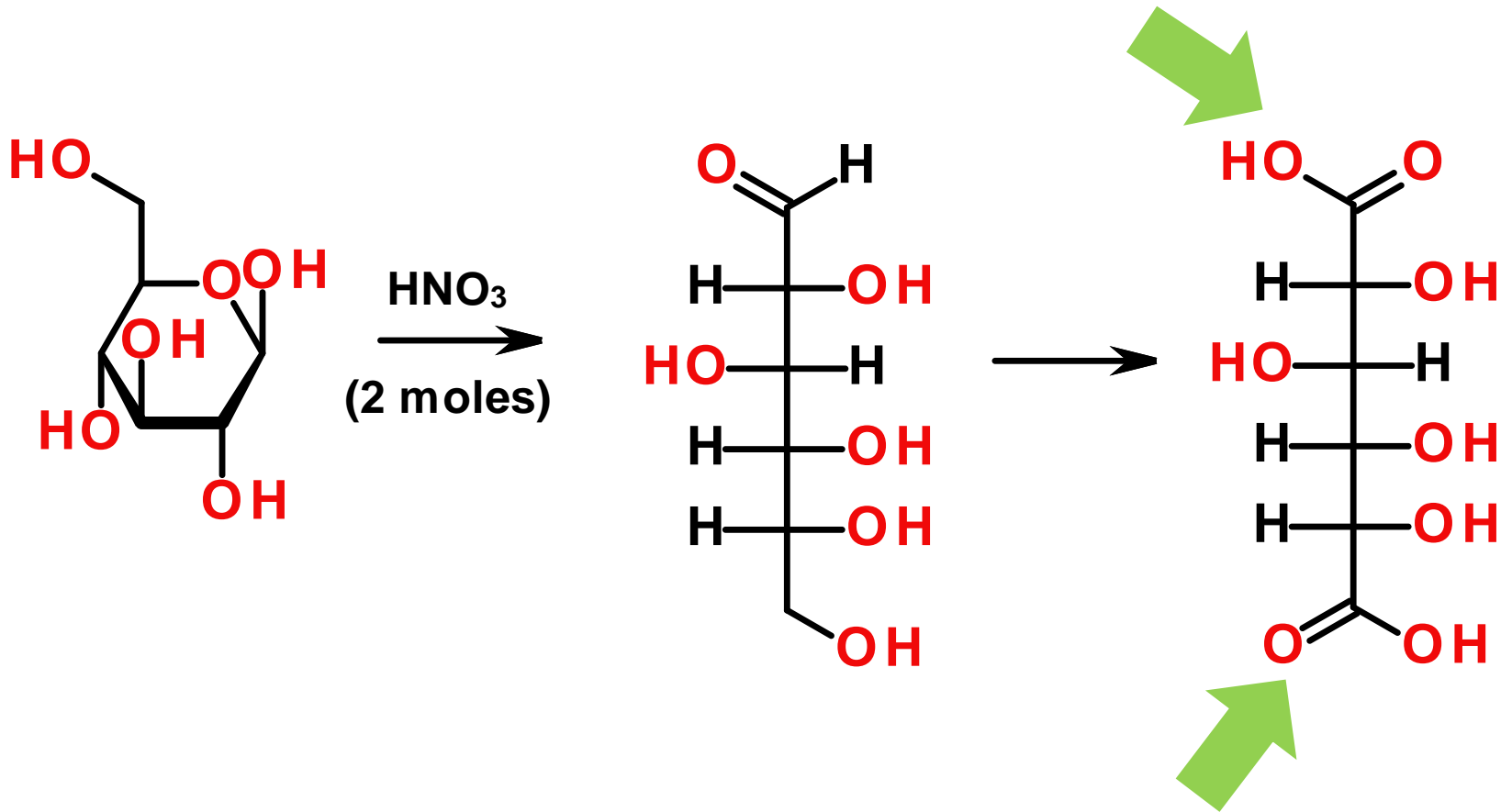
Doesn't matter if it is  $\beta$ - or  $\alpha$ -, since goes to the aldehyde



Tollen's Reagent  
sometimes written as  $\text{Ag}(\text{NH}_3)_2^+$

All aldehyde reagents can react with these hemiacetals, since the hemiacetals are in equilibrium with the aldehyde.

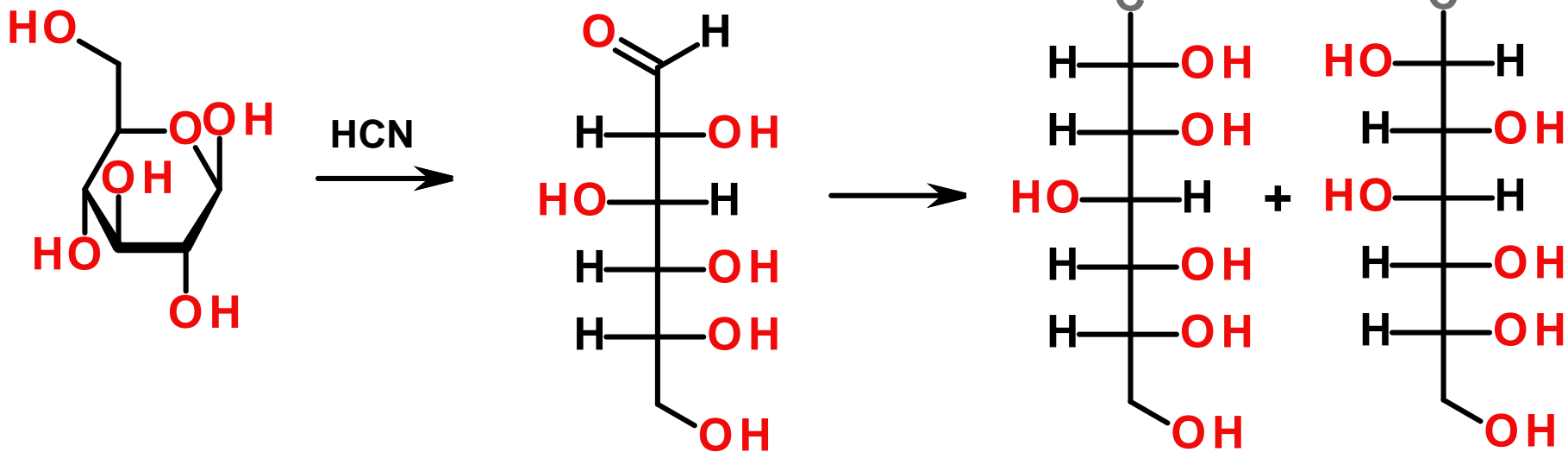
# Nitric Acid Oxidation



**Oxidation occurs on both ends of the molecule.**

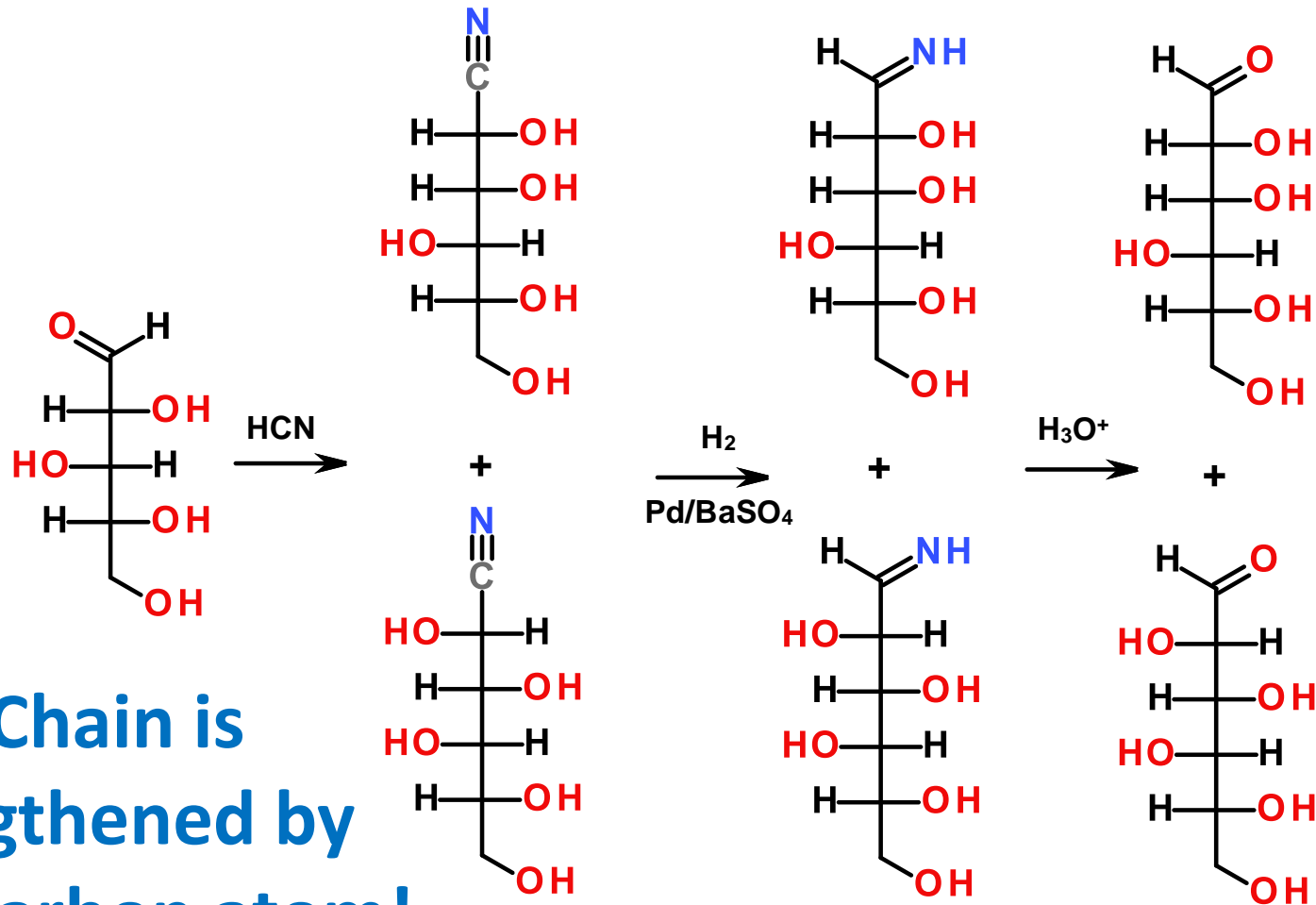


# HCN Addition to Aldehydes



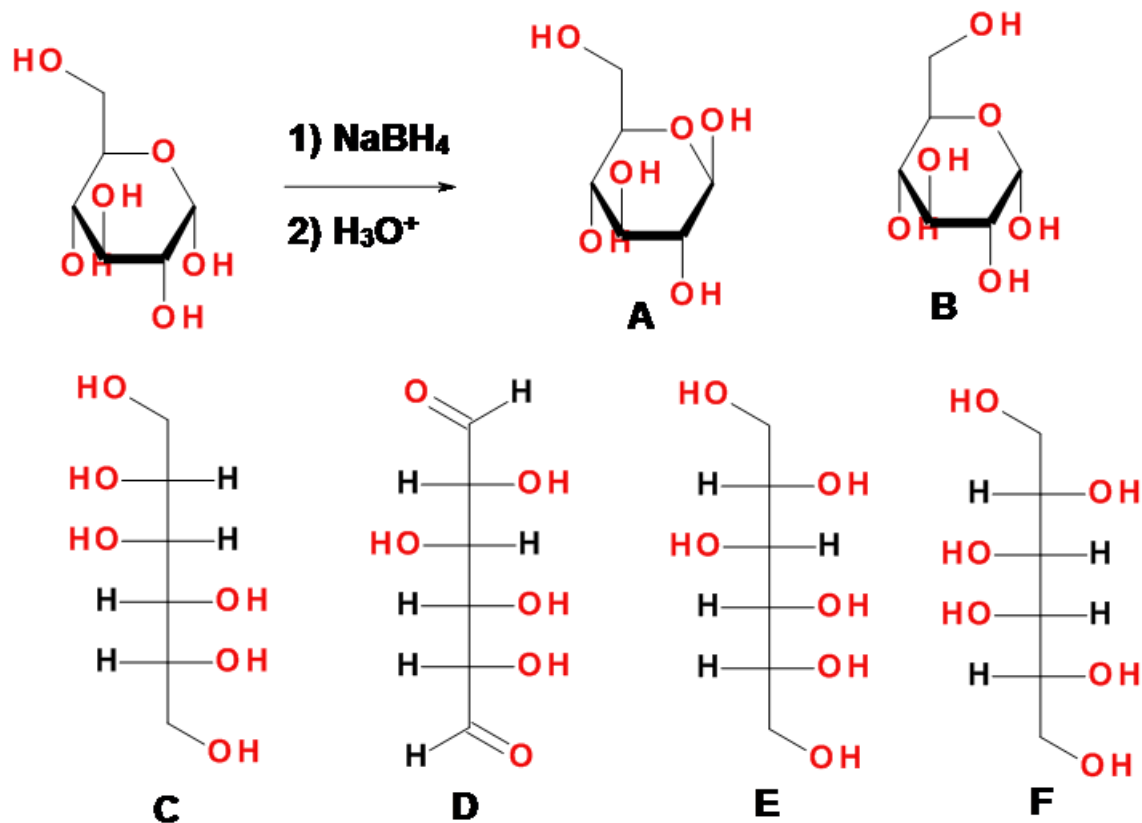
**Both C-1 epimers  
are formed!**

# Kiliani-Fischer Synthesis



Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

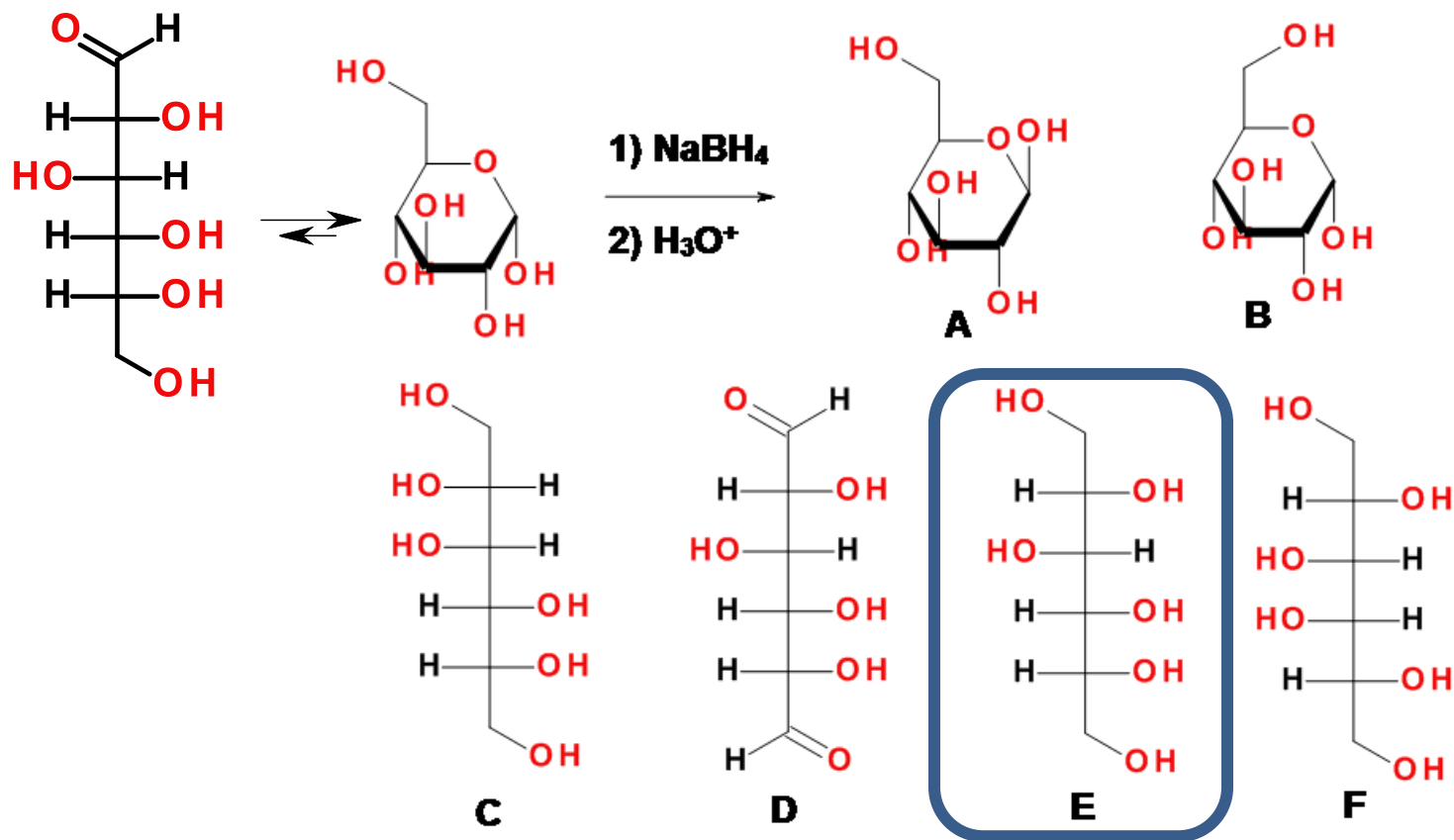
**2016-11-16 Q2**



**G** - None of these products are a major product of the reaction that is shown.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

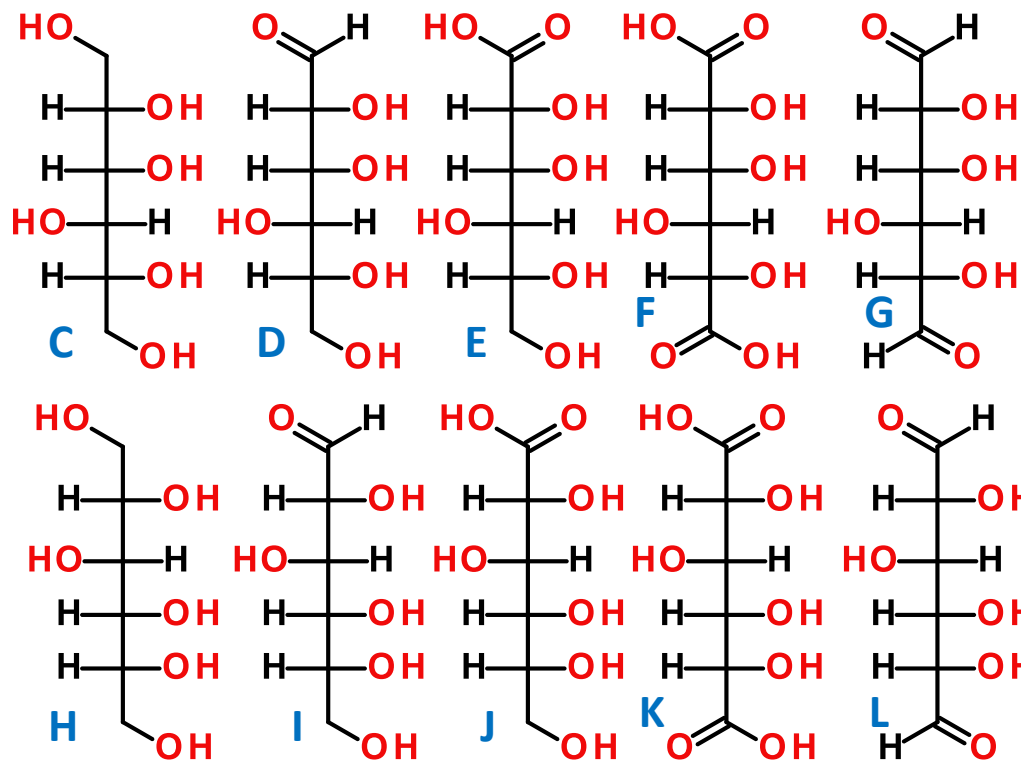
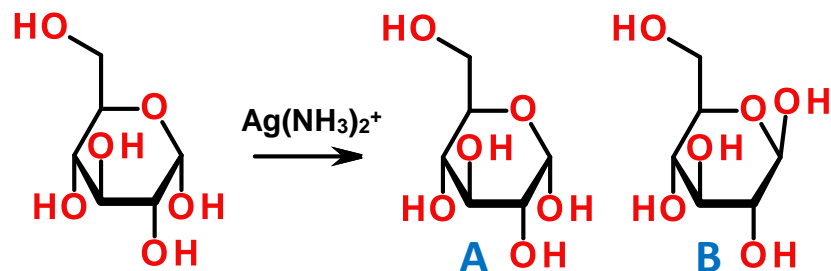
2016-11-16 Q2



**G** - None of these products are a major product of the reaction that is shown.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

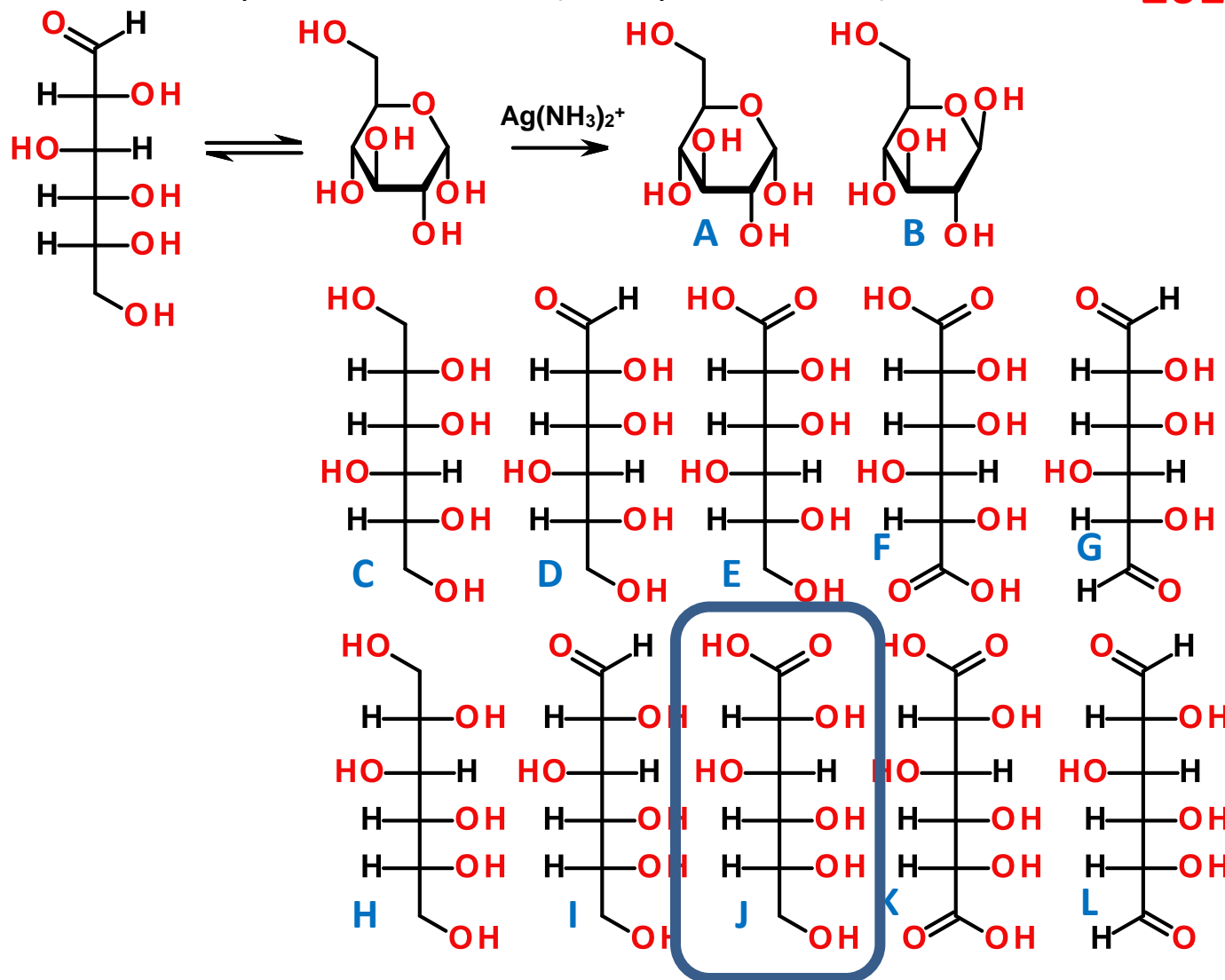
**2016-11-16 Q3**



**M** - None of these products are a major product of the reaction that is shown.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

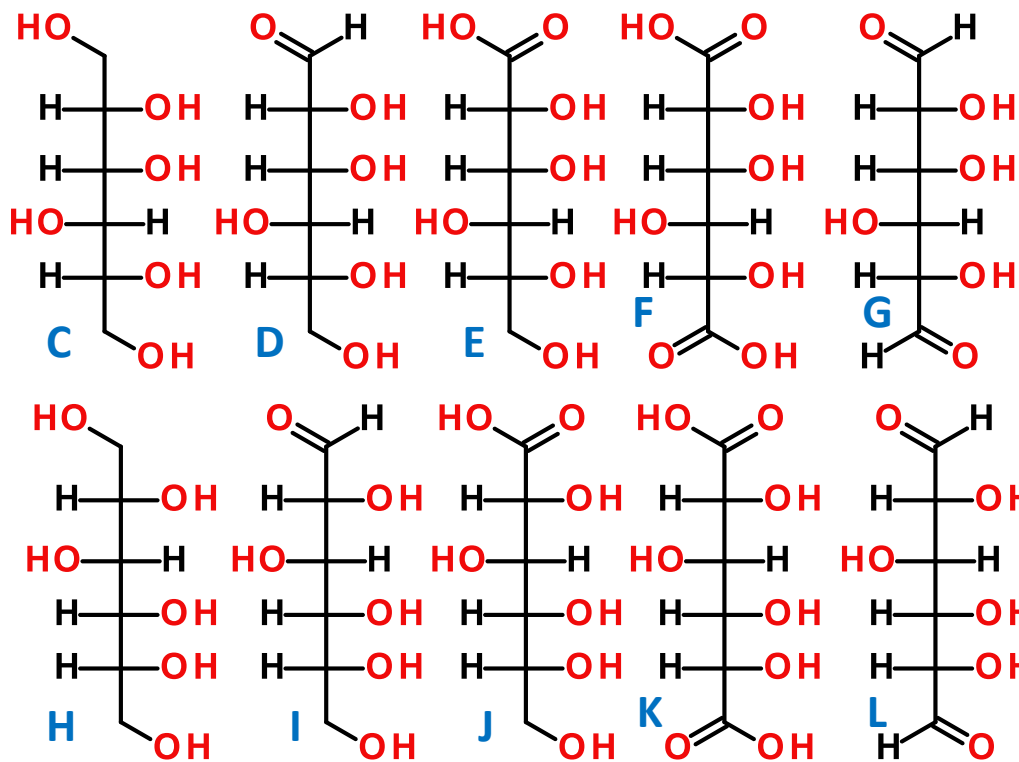
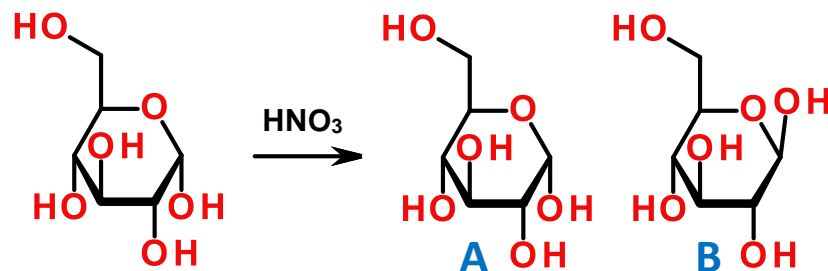
**2016-11-16 Q3**



**M** - None of these products are a major product of the reaction that is shown.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

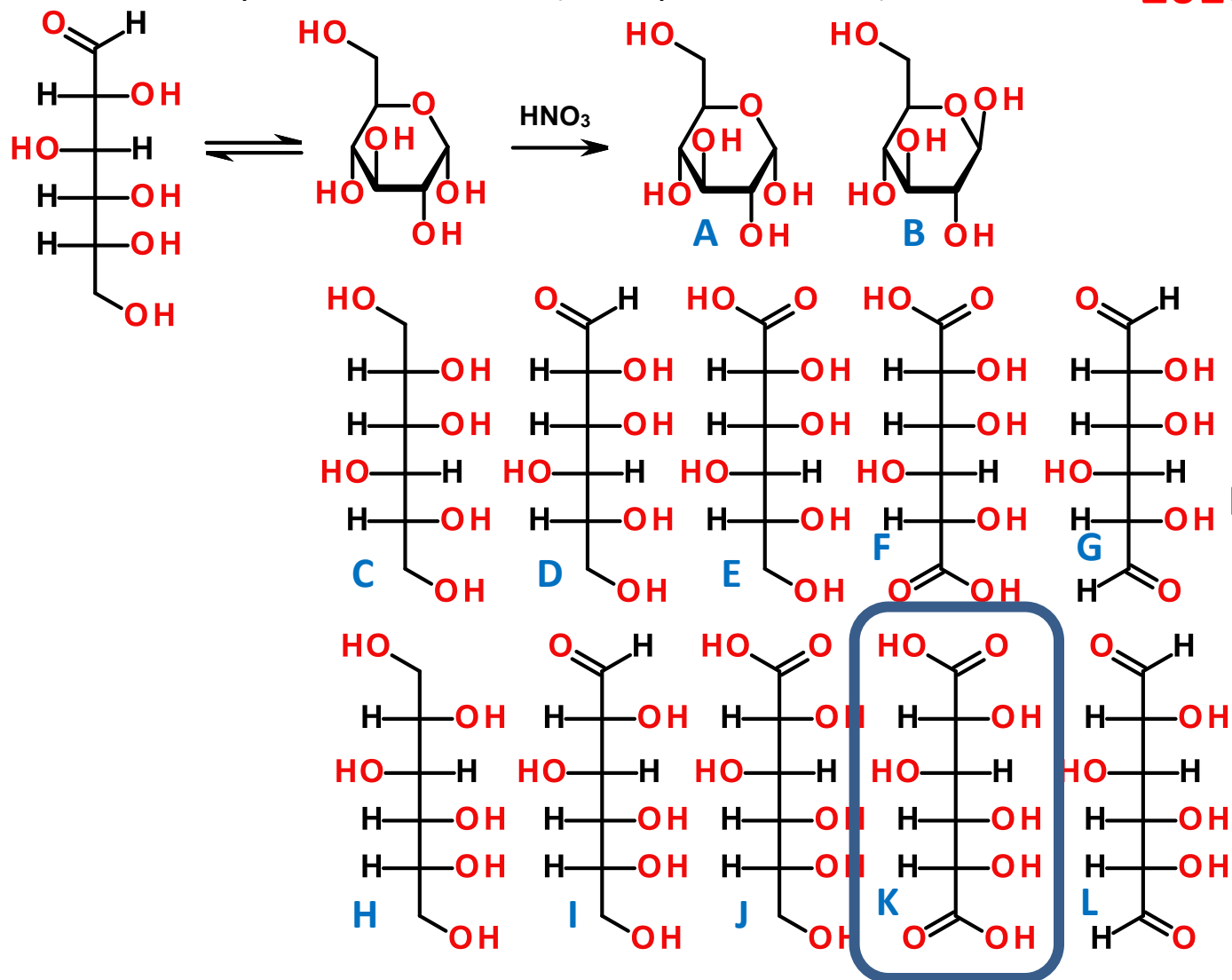
**2016-11-16 Q4**



**M** - None of these products are a major product of the reaction that is shown.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

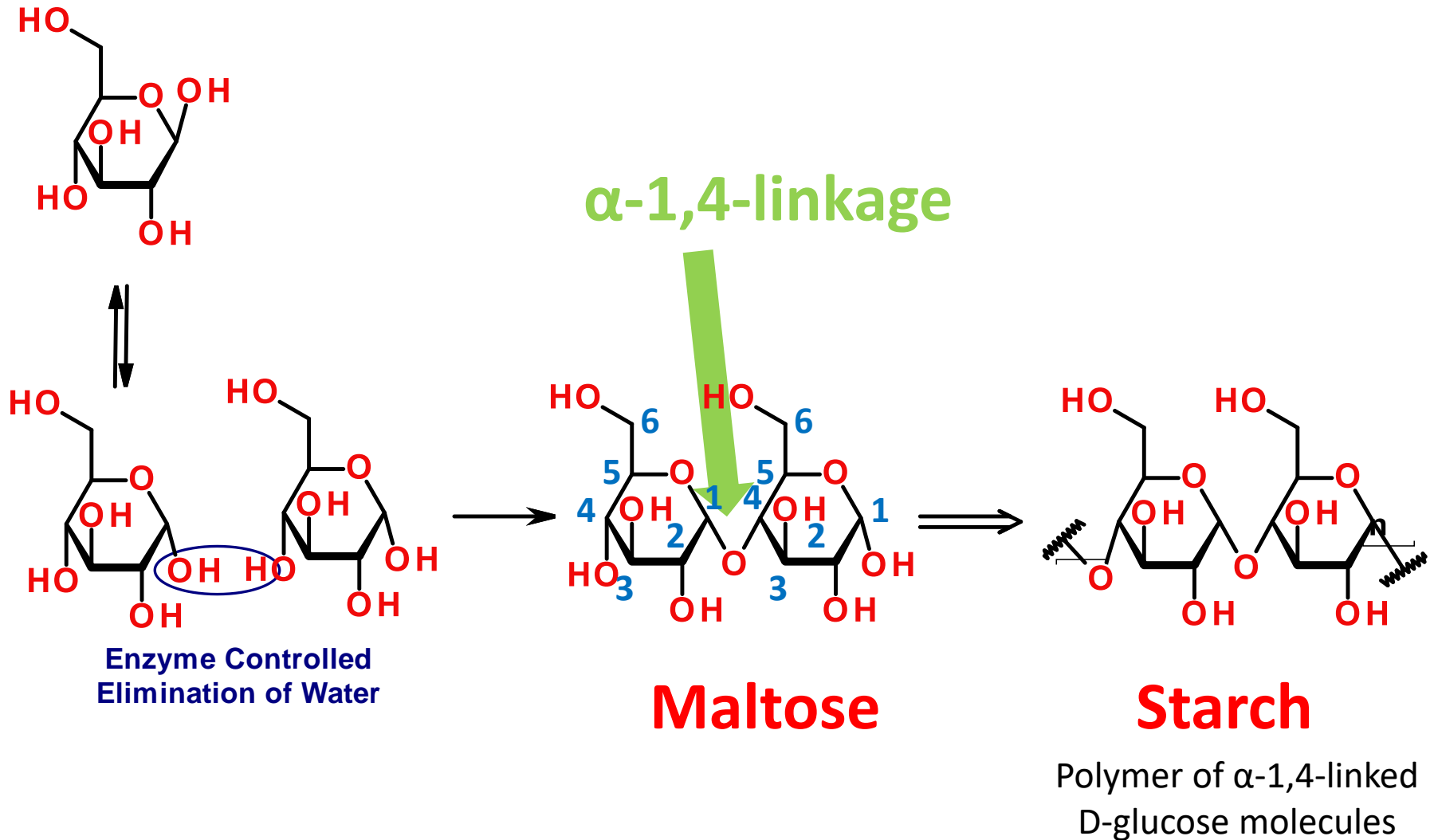
**2016-11-16 Q4**



**M** - None of these products are a major product of the reaction that is shown.



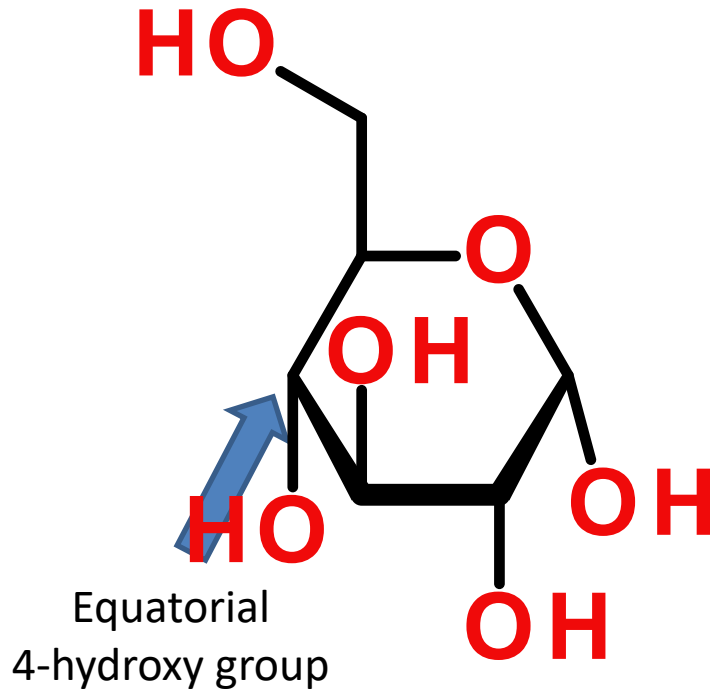
# Important Carbohydrates: Towards Starch



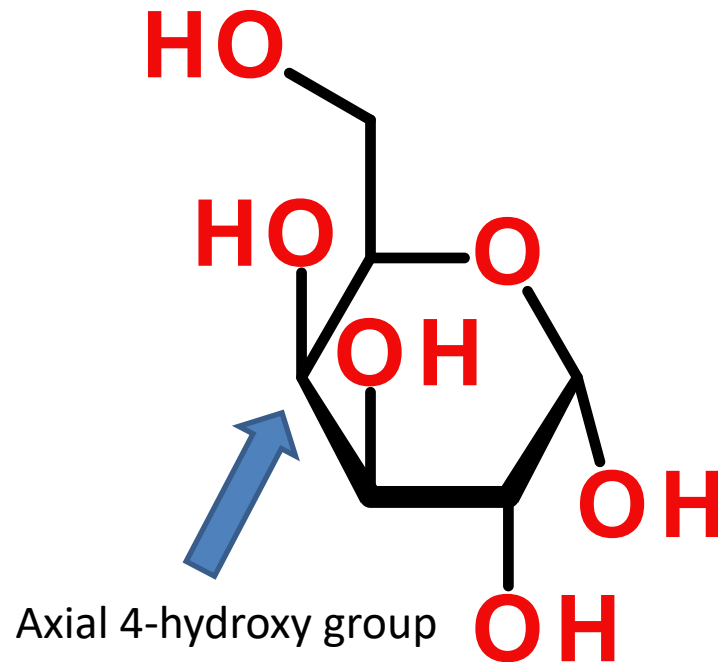


# Glucose vs Galactose

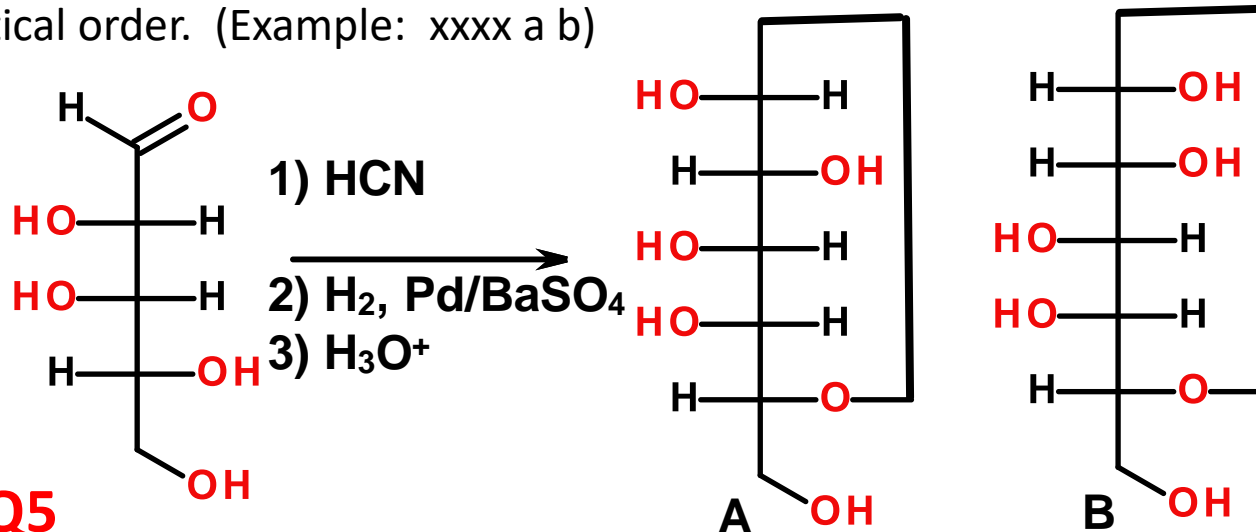
$\alpha$ -D-Glucopyranose



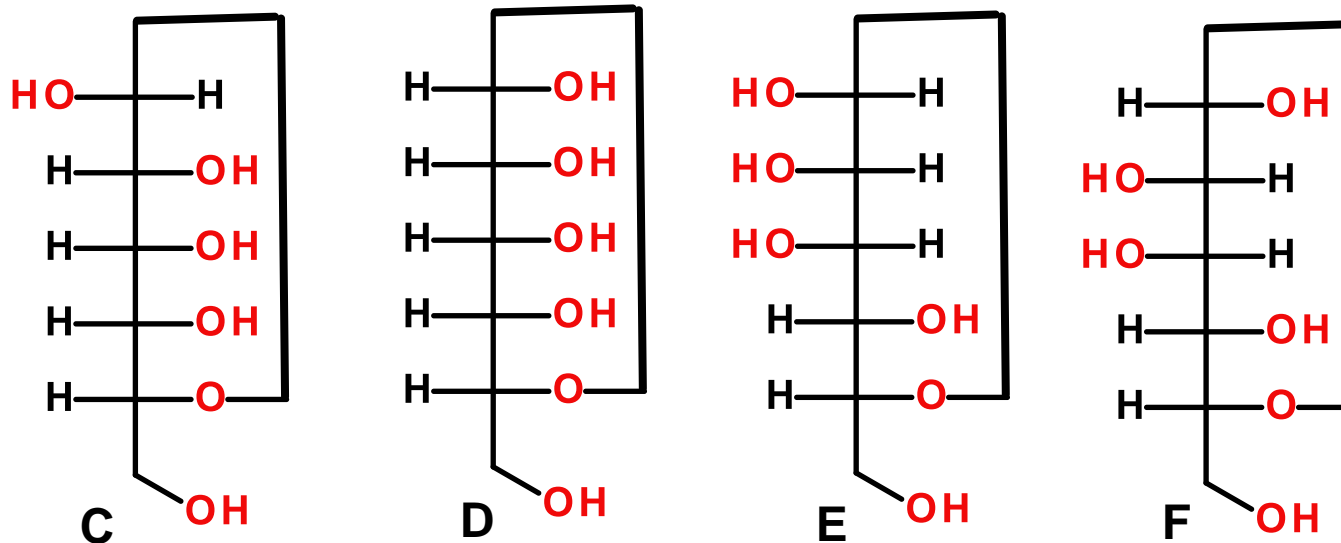
$\alpha$ -D-Galactopyranose



Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

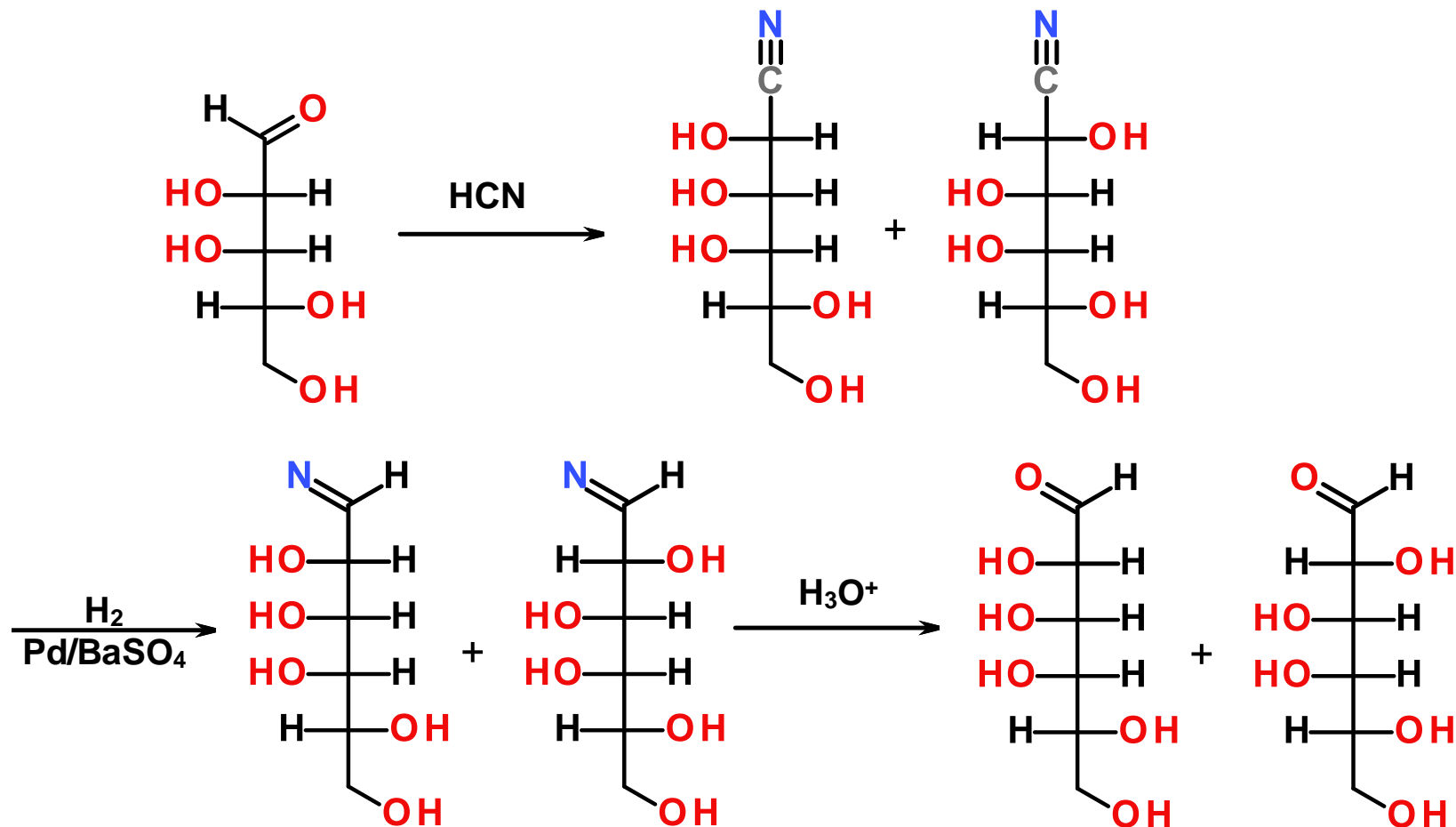


2016-11-16 Q5

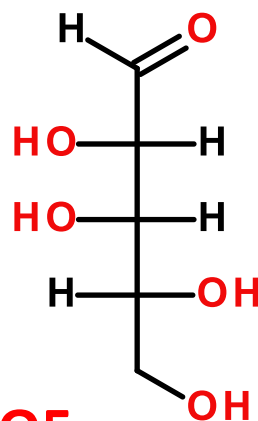


**G** - None of these products are a major product of the reaction that is shown.

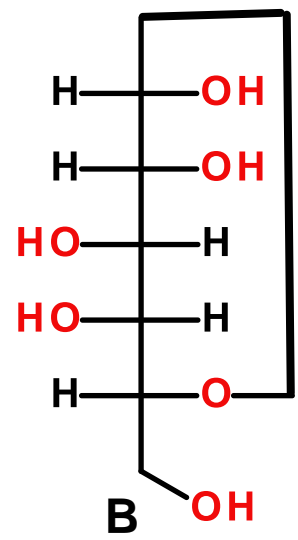
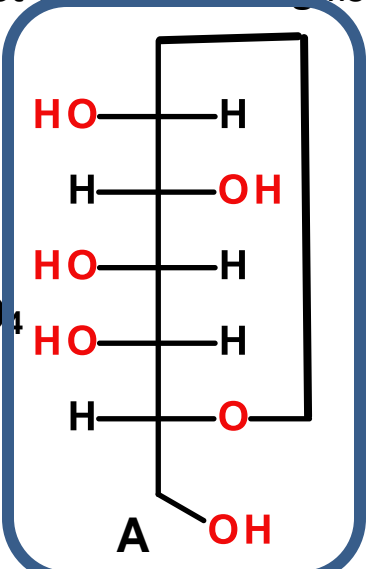
2016-11-16 Q5



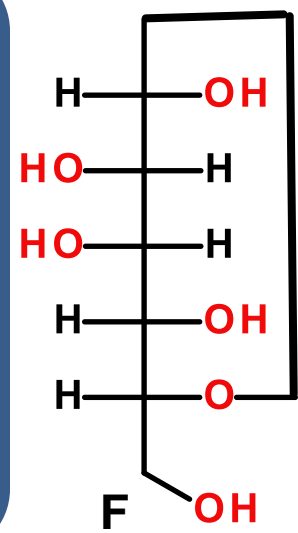
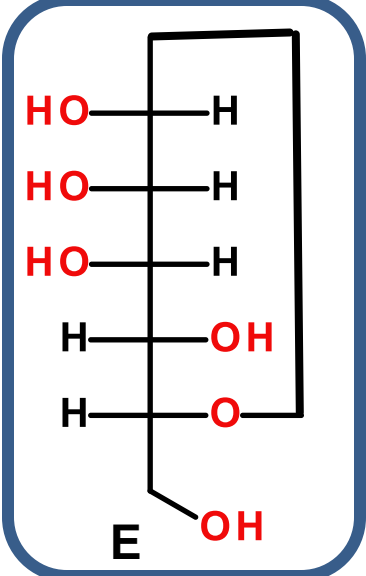
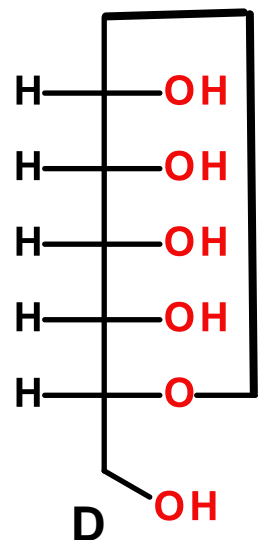
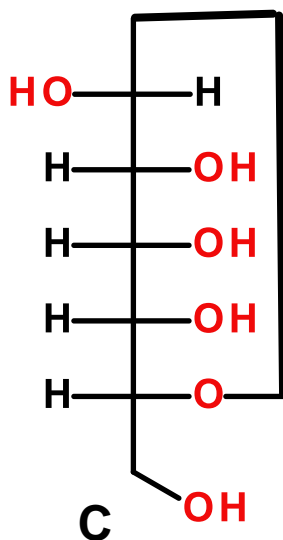
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)



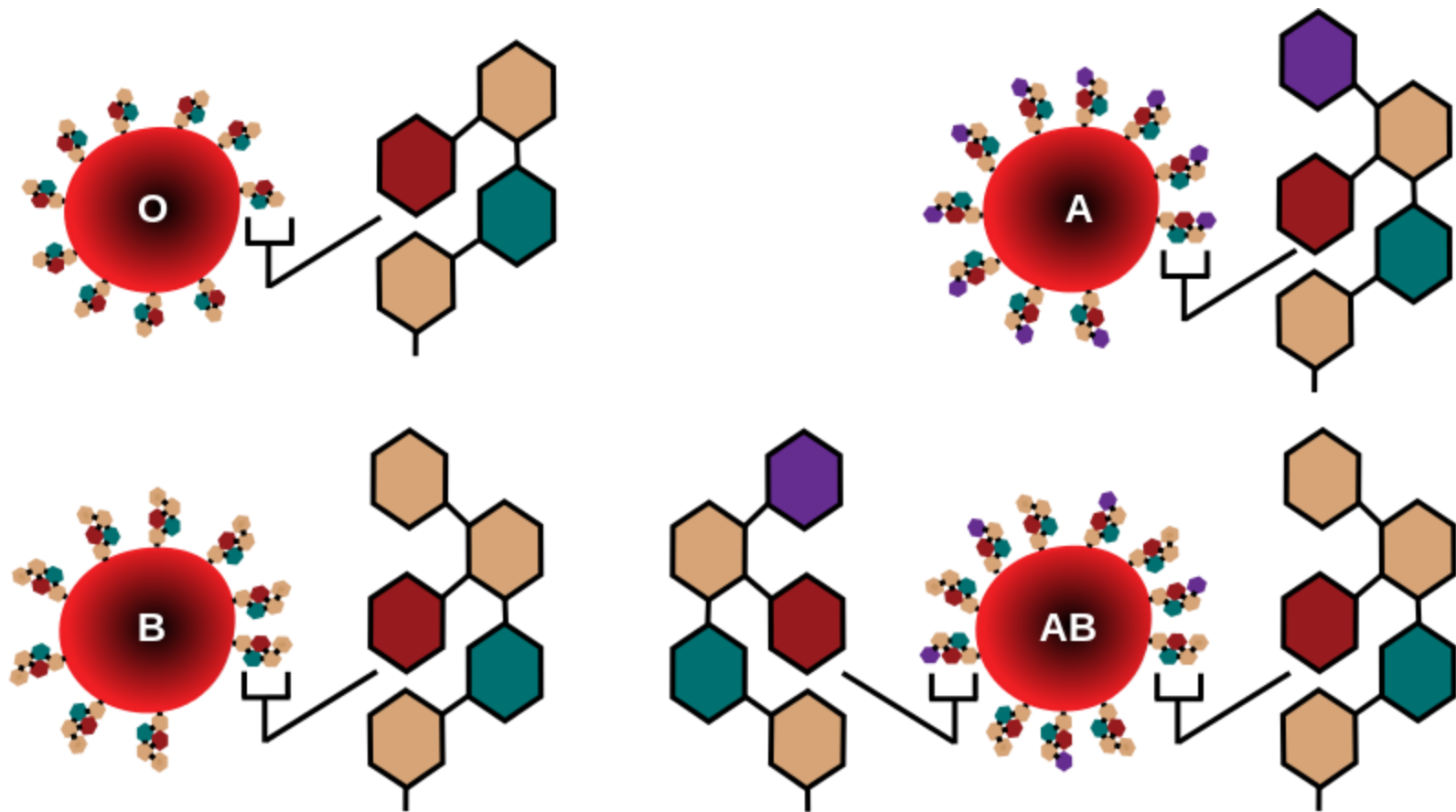
1) HCN  
 2) H<sub>2</sub>, Pd/BaSO<sub>4</sub>  
 3) H<sub>3</sub>O<sup>+</sup>



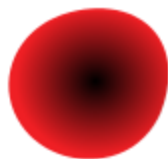
2016-11-16 Q5



**G** - None of these products are a major product of the reaction that is shown.



Legend



Red blood cell



N acetyl-galactosamine



N acetyl-glucosamine

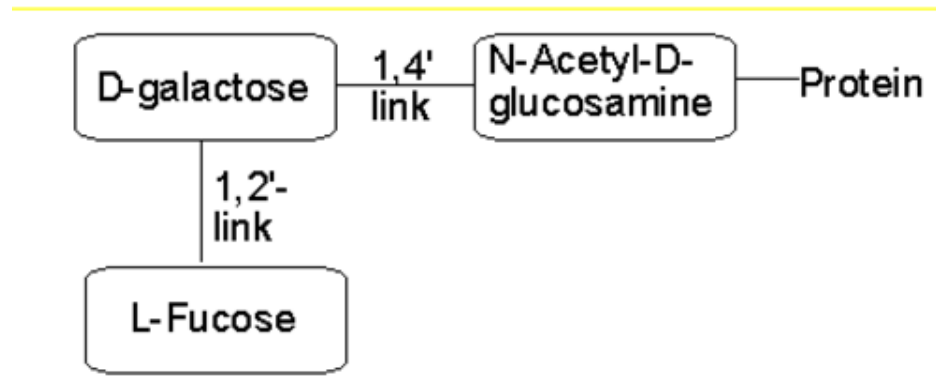
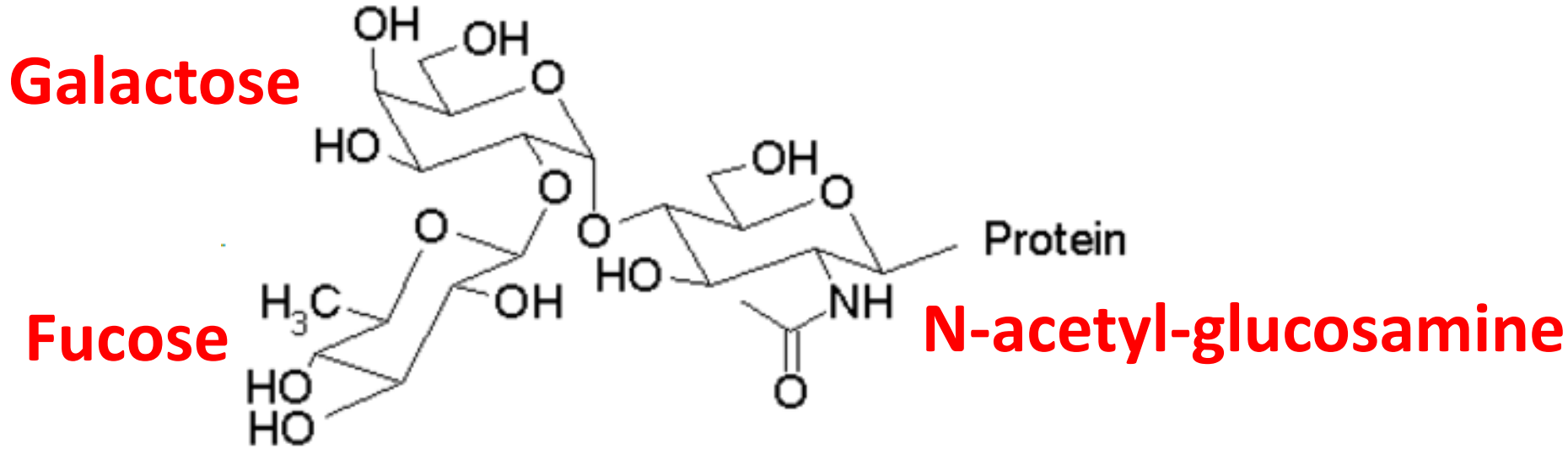


Fucose



Galactose

# Type O Blood



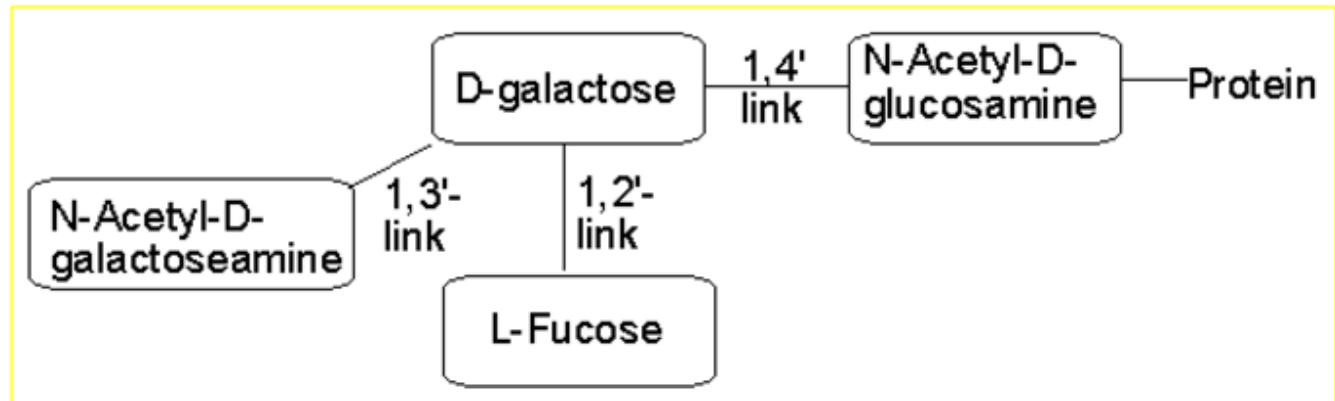
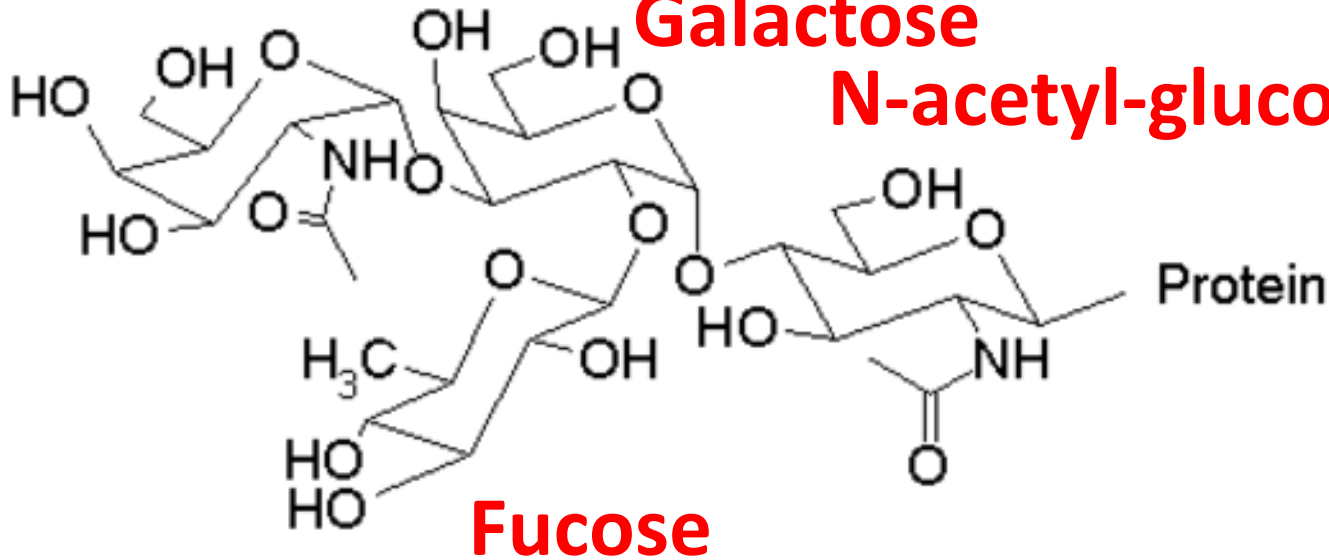


# Type A Blood

**N-acetyl-galactosamine**

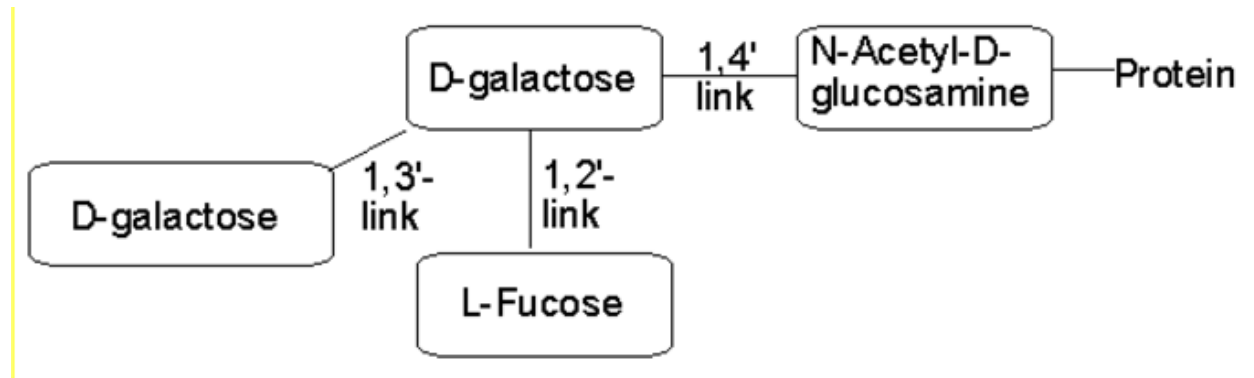
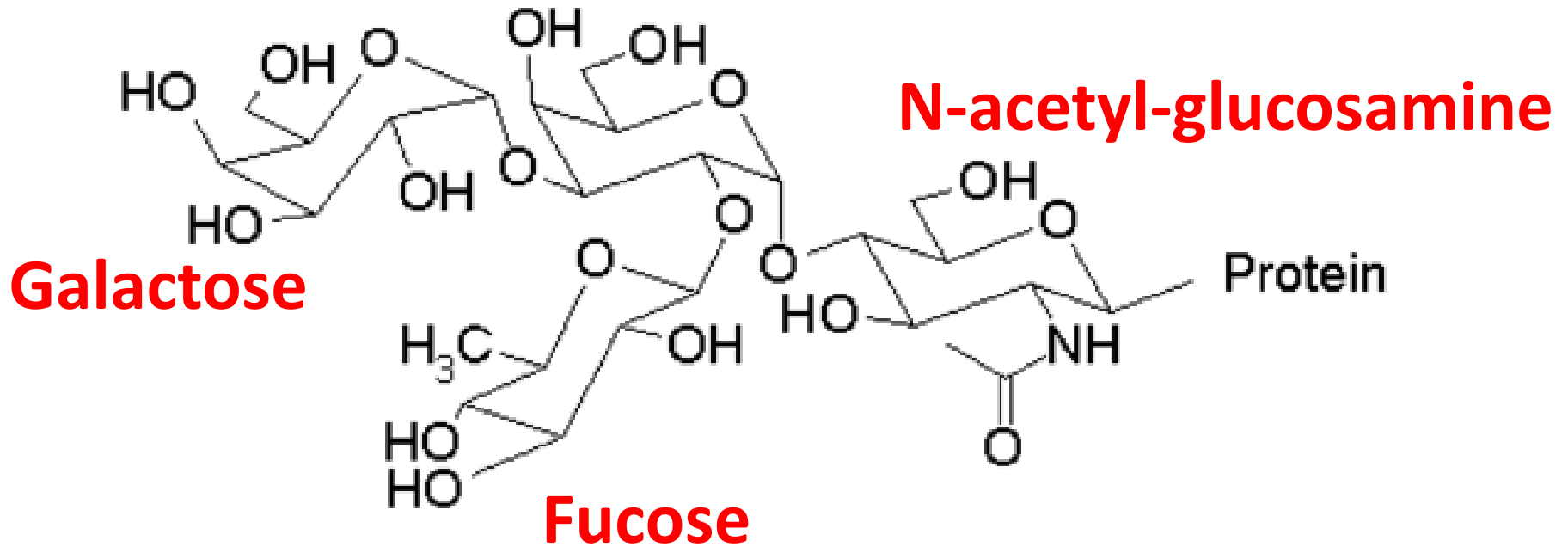
**Galactose**

**N-acetyl-glucosamine**



# Type B Blood

## Galactose



Have a Happy Thanksgiving!

And a wonderful break!