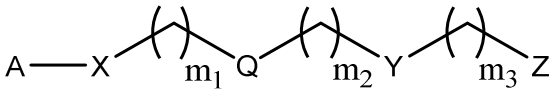
Claims:

1. A monomer of Formula (I):



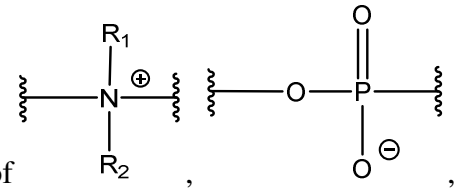
(I),

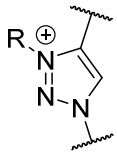
wherein

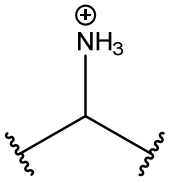
A is selected from a saccharide containing unit and a polyvinyl alcohol containing unit;

X is selected from the group consisting of O, NH, NR', C(O), and C_{1-20} alkylene, wherein C_{1-20} alkylene is optionally substituted from 1 to 20 times with a substituent selected independently at each occurrence thereof from the group consisting of OH, halogen, cyano, —CF_3, and C_{1-6} alkoxy.

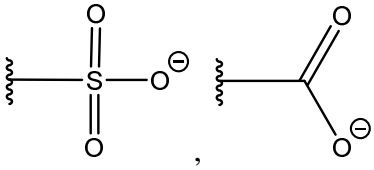
Q is absent or is a linker;

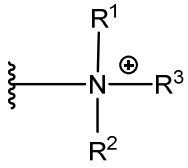
Y is selected from the group consisting of 

, 

, and 

;

Z is selected from the group consisting of 

, and 

;

m_1 is 0 to 50;

m_2 is 0 to 50;

m_3 is 0 to 50;

R is C_{1-20} alkyl;

R' is –C(O)-C_{1-6} alkene;

R^1 is C_{1-20} alkyl;

R^2 is C_{1-20} alkyl; and

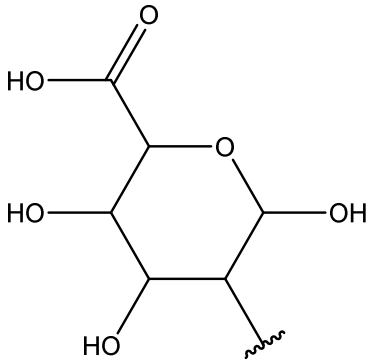
R^3 is C_{1-20} alkyl.

2. The monomer of claim 1, wherein:

(a) A is selected from the group consisting of a monosaccharide, disaccharide, trisaccharide, and oligosaccharide,

optionally wherein A is a monosaccharide selected from the group consisting of a substituted or unsubstituted hexose, hexulose, hexuronic acid, pentose, pentulose, and penturonic acid,

more optionally wherein A is selected from the group consisting of:



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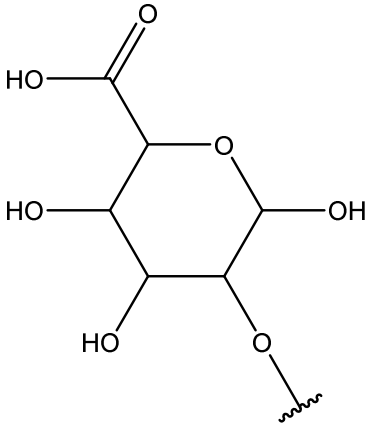

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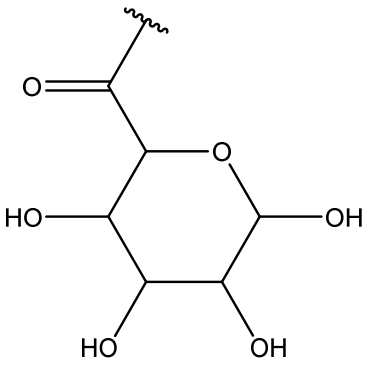
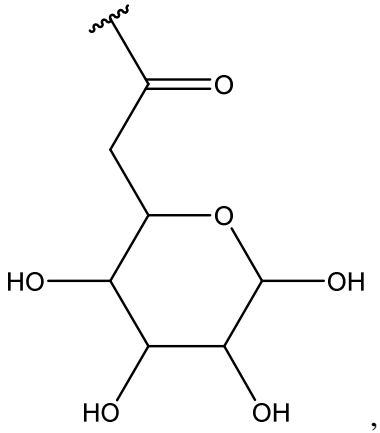
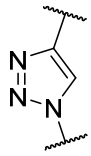


, and


, wherein  is the point of attachment of A to X; and/or

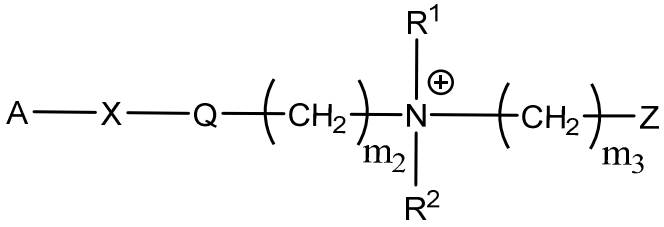
(b) Q is present and is selected from the group consisting of C_{1-20} alkylene, C_{3-20} cycloalkylene, arylene, heteroarylene, heterocyclene, -O-C_{1-20} alkylene, poly(ethylene glycol), and polypeptide; wherein C_{1-20} alkylene, C_{3-20} cycloalkylene, arylene, heteroarylene, heterocyclylene, or -O-C_{1-20} alkylene is optionally substituted from 1 to 20 times with a substituent selected independently at each occurrence thereof from the group consisting of —OH, halogen, cyano, —CF_3, C_{1-6} alkyl, and C_{1-6} alkoxy; and wherein C_{1-20} alkylene is optionally interrupted by one or more heteroatoms selected from the group consisting of oxygen nitrogen, sulfur, and nitrogen,

optionally wherein Q is heteroarylene,

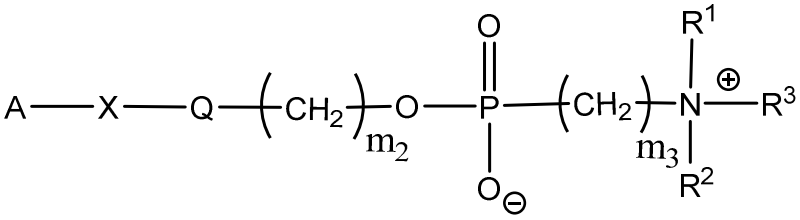


more optionally wherein Q is .

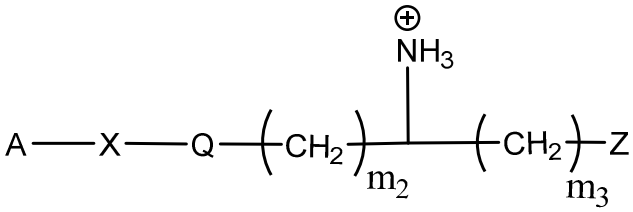
3. The monomer of claim 1 or 2 having a Formula (Ia), (Ib) or (Ic):



(Ia),

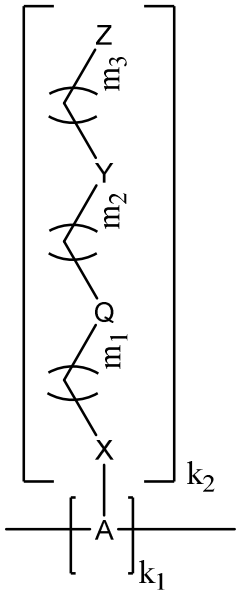


(Ib),



(Ic).

4. A polymer of Formula (IV):



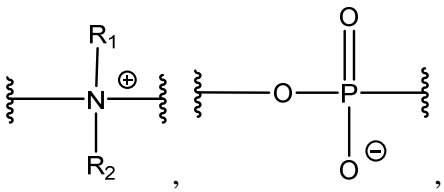
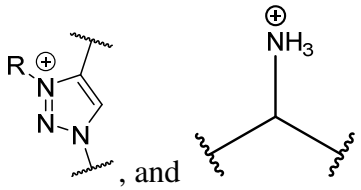
(IV),

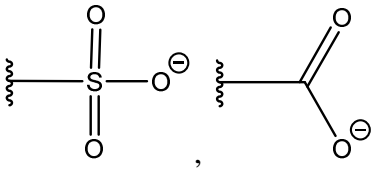
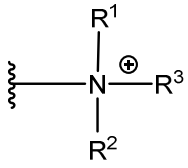
wherein,

A is independently selected from a saccharide containing unit and a polyvinyl alcohol containing unit for each monomer unit of the polymer;

X is selected from the group consisting of O, NH, NR', C(O), and C_{1-20} alkylene, wherein C_{1-20} alkylene is optionally substituted from 1 to 20 times with a substituent selected independently at each occurrence thereof from the group consisting of OH, halogen, cyano, —CF_3, and C_{1-6} alkoxy.

Q is absent or is a linker;

Y is selected from the group consisting of  ,  , and ;

Z is selected from the group consisting of  , and  ;

m_1 is 0 to 50;

m_2 is 0 to 50;

m_3 is 0 to 50;

R is C_{1-20} alkyl;

R' is $-C(O)-C_{1-6}$ alkene;

R^1 is C_{1-20} alkyl;

R^2 is C_{1-20} alkyl;

R^3 is C_{1-20} alkyl

k_1 is any integer; and

k_2 is independently selected for each monomer unit from 0 or 1, with the proviso that at least one k_2 is 1;

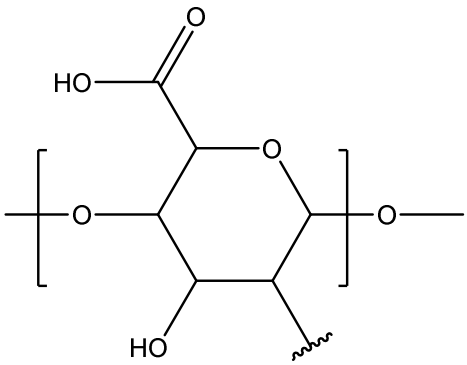
wherein the monomers units of the polymer are the same or different.

5. The polymer of claim 4, wherein:

(a) A is a saccharide independently selected at each occurrence from a monosaccharide, disaccharide, or oligosaccharide containing unit,

optionally wherein A is a monosaccharide selected from the group consisting of a substituted or unsubstituted hexose, hexulose, hexuronic acid, pentose, pentulose, and penturonic acid,

more optionally wherein A is selected from the group consisting of: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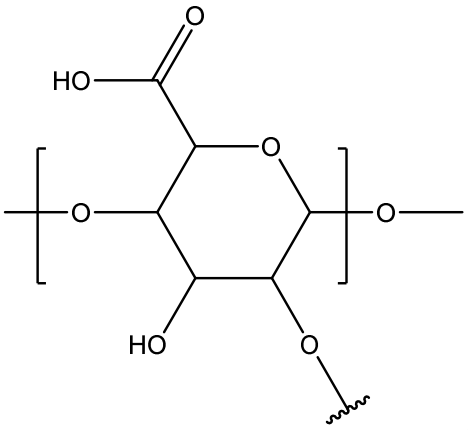
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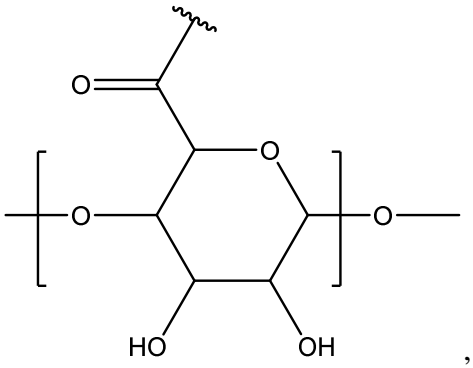
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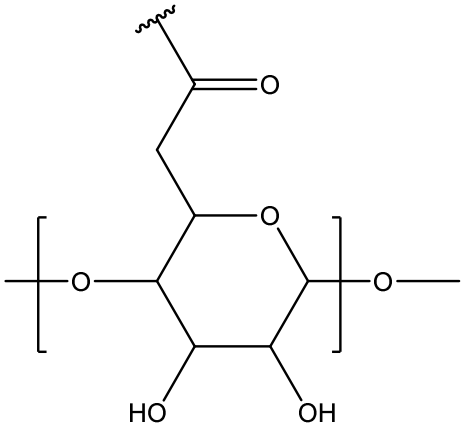
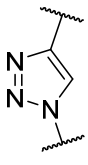
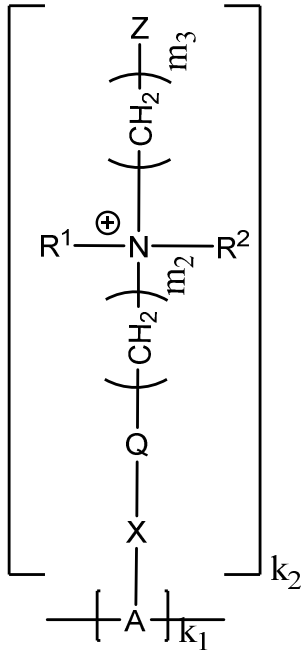

, wherein  is the point of attachment of A to X; and/or

(b) Q is present and is selected from the group consisting of C_{1-20} alkylene, C_{3-20} cycloalkylene, arylene, heteroarylene, heterocyclene, -O-C_{1-20} alkylene, poly(ethylene glycol), and polypeptide; wherein C_{1-20} alkylene, C_{3-20} cycloalkylene, arylene, heteroarylene, heterocyclylene, or -O-C_{1-20} alkylene is optionally substituted from 1 to 20 times with a substituent selected independently at each occurrence thereof from the group consisting of —OH, halogen, cyano, —CF_3, C_{1-6} alkyl, and C_{1-6} alkoxy; and wherein C_{1-20} alkylene is optionally interrupted by one or more heteroatoms selected from the group consisting of oxygen nitrogen, sulfur, and nitrogen,

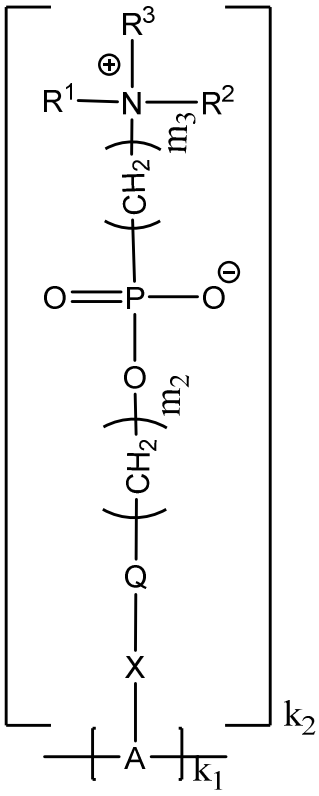
optionally wherein Q is heteroarylene,

more optionally wherein Q is  .

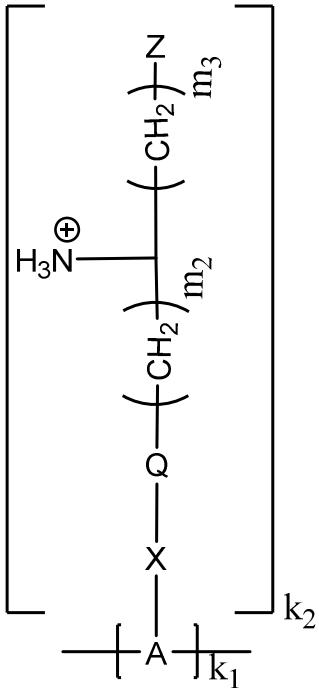
6. The polymer of claim 4 or 5 having a Formula (IVa), (IVb) or (IVc):



(IVa),

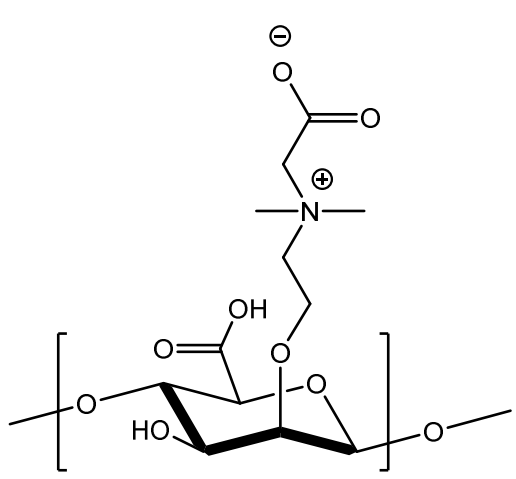


(IVb),



(IVc).

7. The polymer of any one of claims 4 to 6, wherein one or more monomer units of the polymer is independently selected from the group consisting of:



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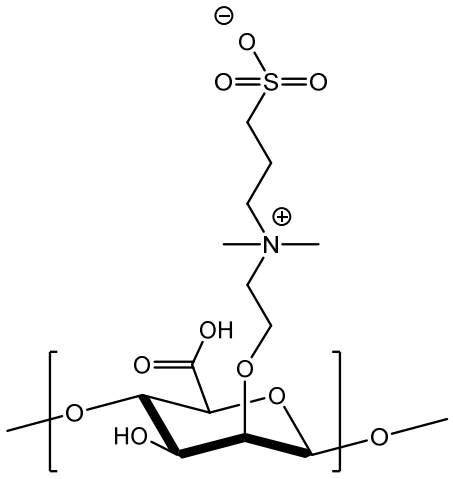

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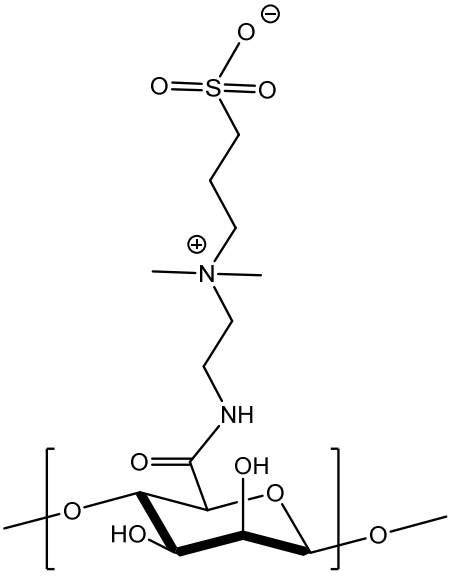

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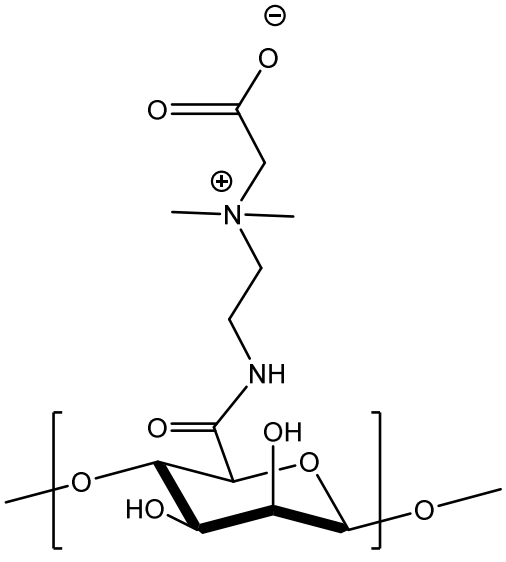

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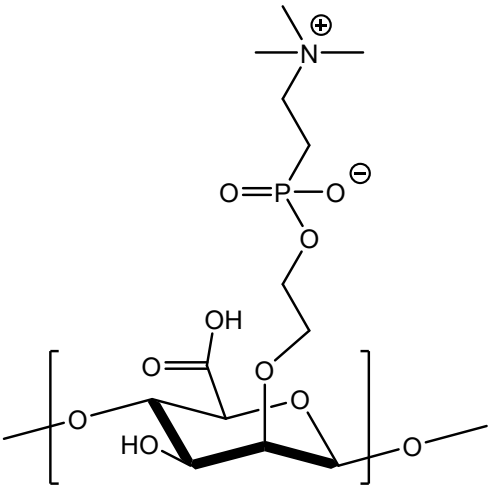

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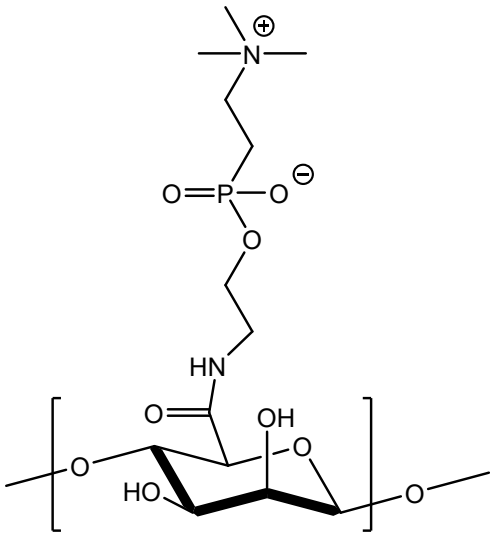

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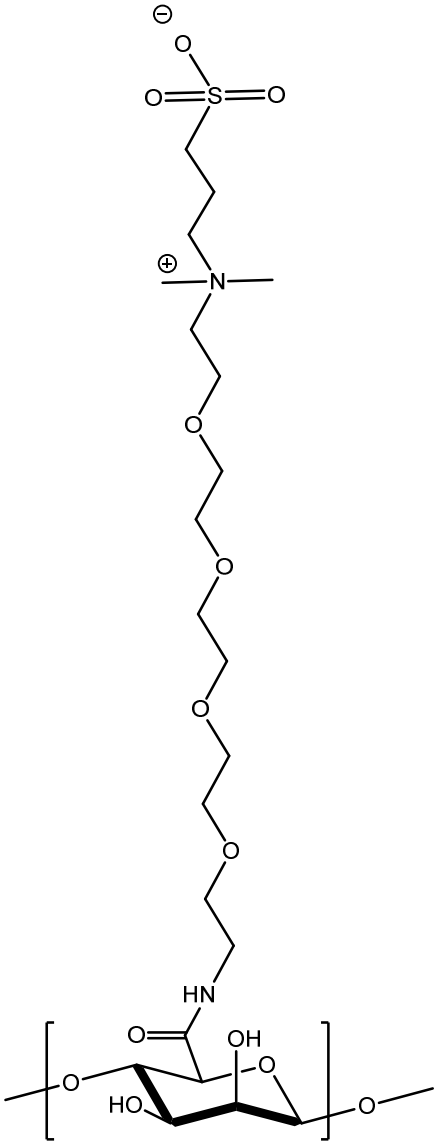

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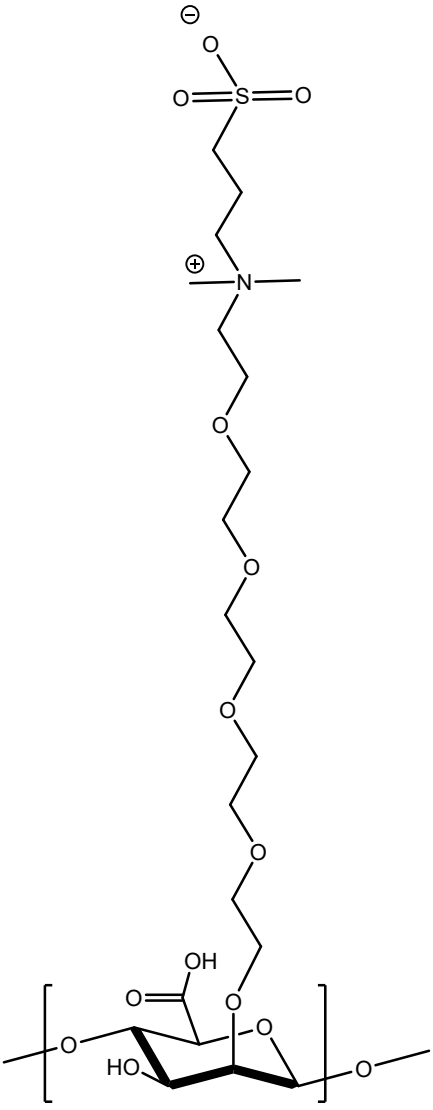

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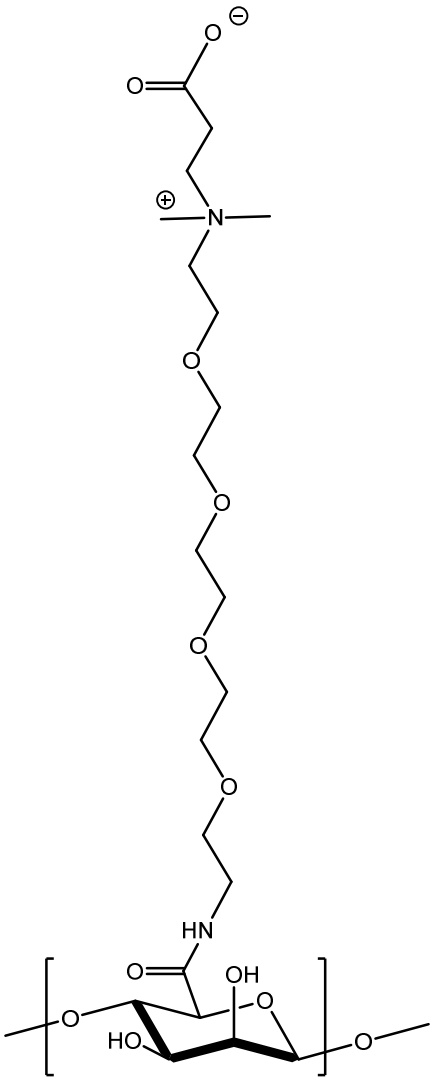

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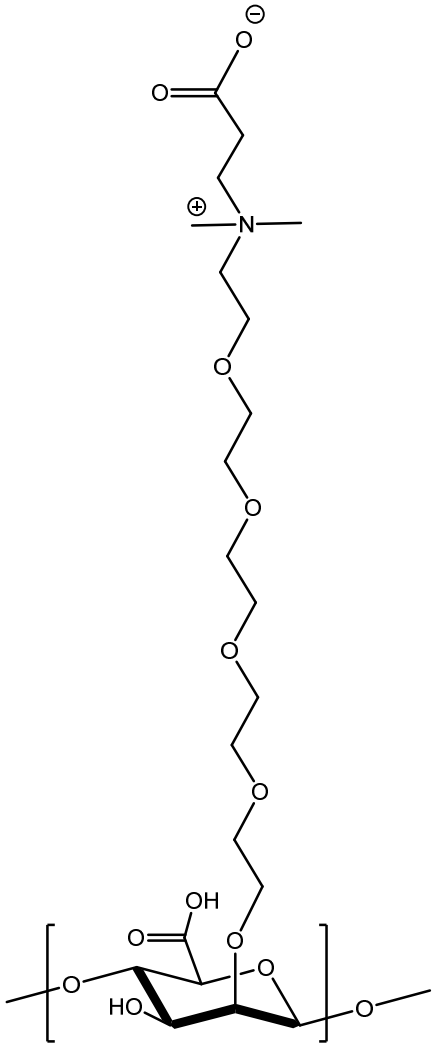

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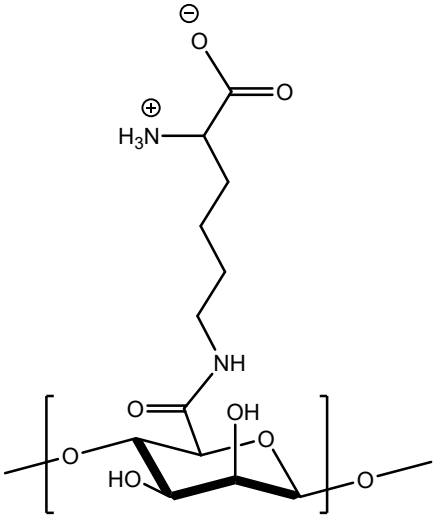

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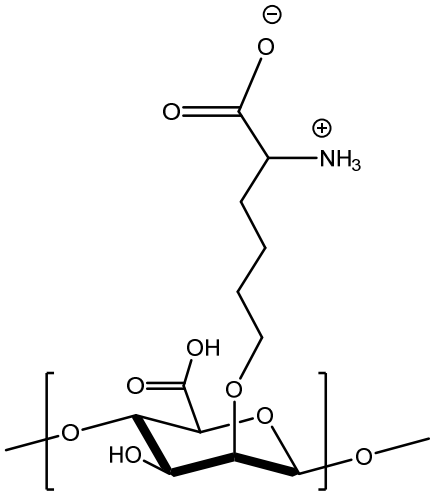

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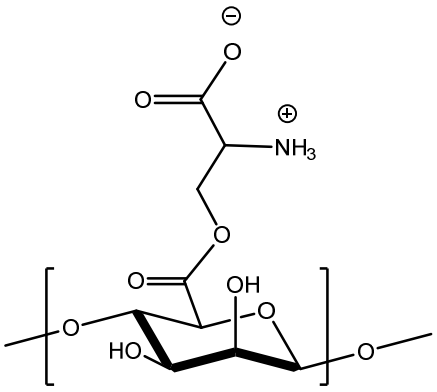

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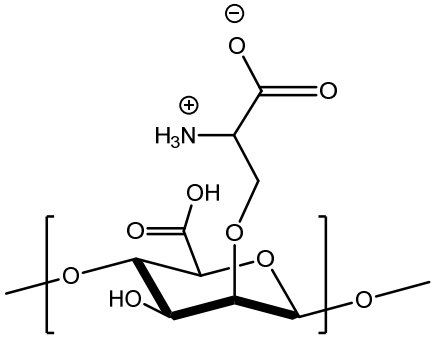

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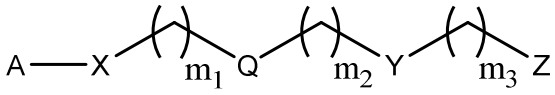
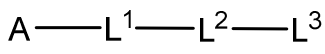
8. The polymer of any one of claims 4 to 7, wherein said polymer comprises two or more different monomer units, and/or wherein k_1 is 5 to 10,000

9. The polymer of any one of claims 4 to 8, wherein said polymer comprises one or more monomer units of Formula (I):



(I), and further comprises one or more monomer units of Formula (II):



(II),

wherein

L^1 is selected from the group consisting of O, NH, NR', C(O), and C_{1-20} alkylene, wherein C_{1-20} alkylene is optionally substituted from 1 to 20 times with a substituent selected independently at each occurrence thereof from the group consisting of OH, halogen, cyano, —CF_3, and C_{1-6} alkoxy;

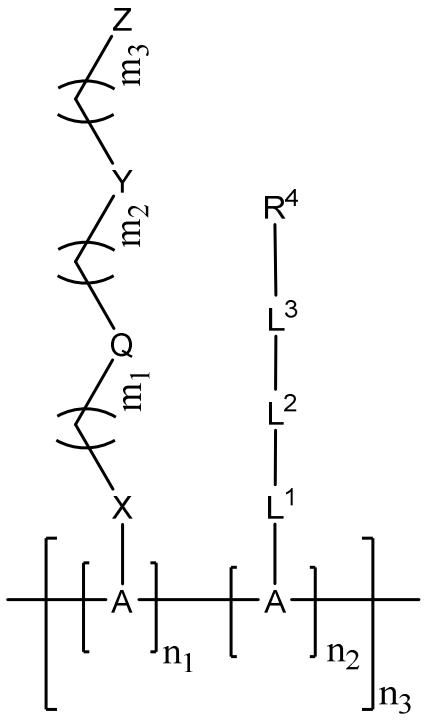
L^2 is absent or is C_{1-20} alkylene, wherein C_{1-20} alkylene is optionally substituted from 1 to 20 times with a substituent selected independently at each occurrence thereof from the group consisting of OH, halogen, cyano, —CF_3, and C_{1-6} alkoxy;

L^3 is selected from the group consisting of C_{1-20} alkylene, C_{1-20} alkenylene, C_{3-12} cycloalkenylene, and arylene, wherein arylene is optionally substituted from 1 to 3 times with a substituent selected independently at each occurrence thereof from the group consisting of heteroarylene and heterocyclylene; and

R^4 is selected from the group consisting of H, SH, N_3, C_{1-6} alkyl, C_{2-20} alkenyl, C_{2-20} alkynyl, C_{3-12} cycloalkenyl, C_{3-12} cycloalkynyl, heteroaryl, and heterocyclyl, wherein C_{1-6} alkyl, C_{2-20} alkenyl, C_{2-20} alkynyl, C_{3-12} cycloalkenyl, C_{3-12} cycloalkynyl, heteroaryl, and heterocyclyl is optionally substituted from 1 to 3 times with a substituent selected independently

at each occurrence thereof from the group consisting of H, OH, halogen, cyano, —CF_3, and C_{1-6} alkoxy,

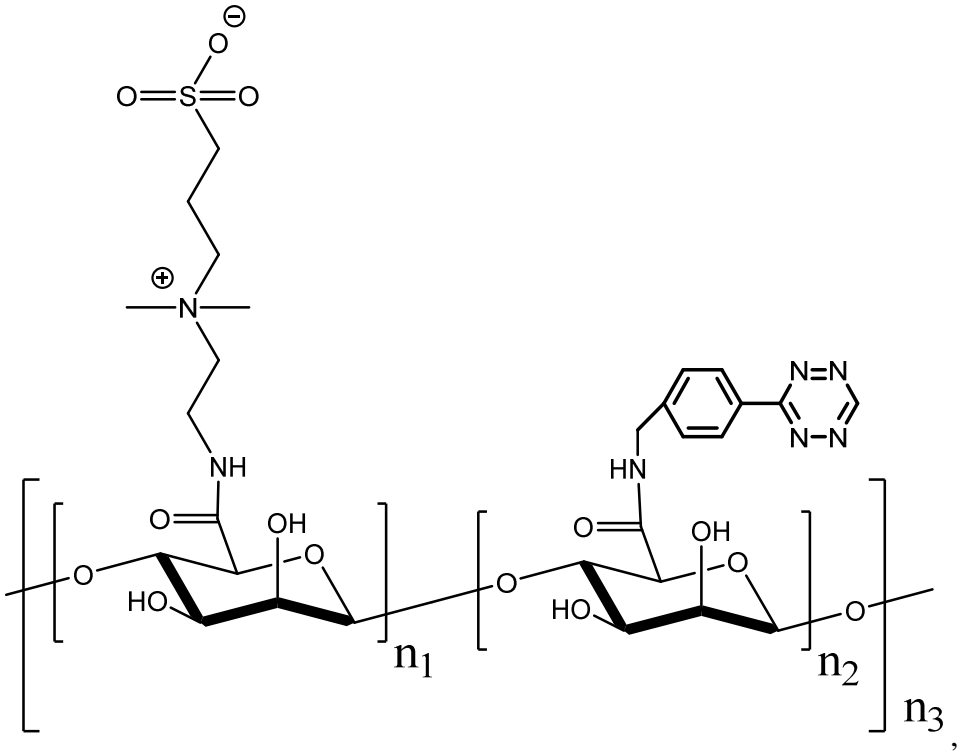
optionally wherein the polymer has Formula (IIa):

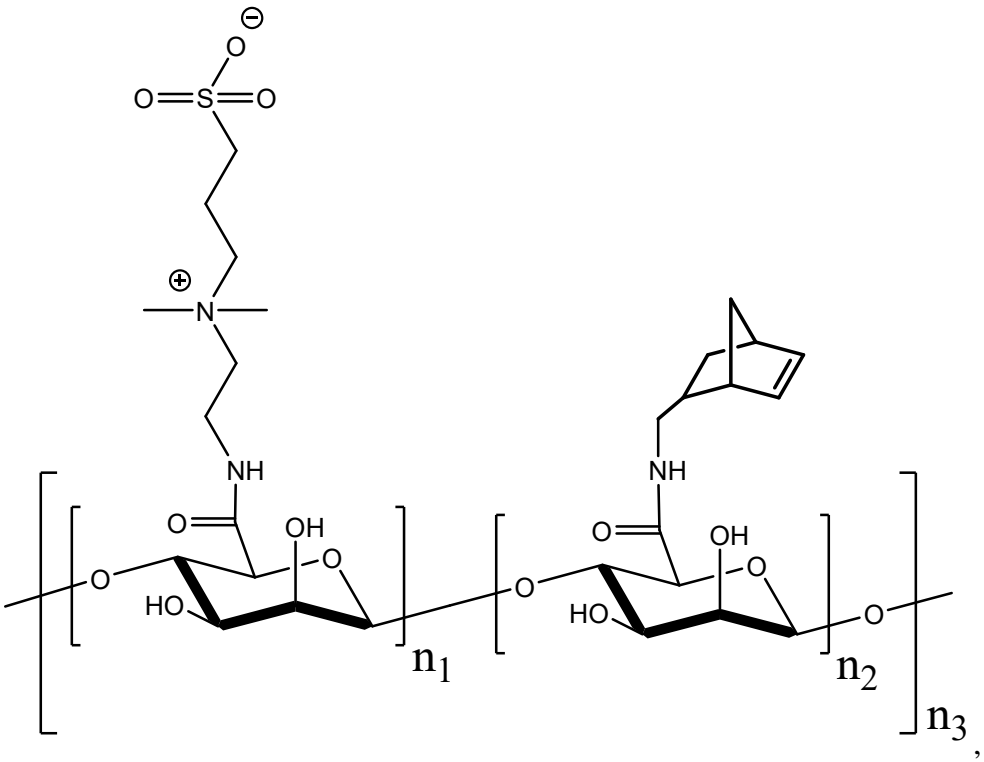


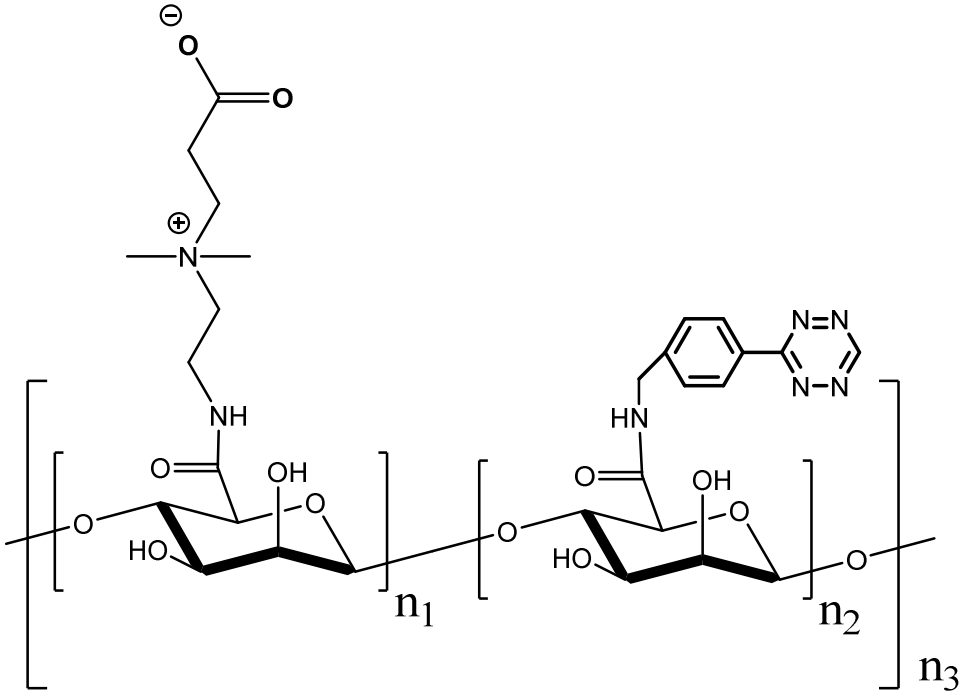
(IIa),

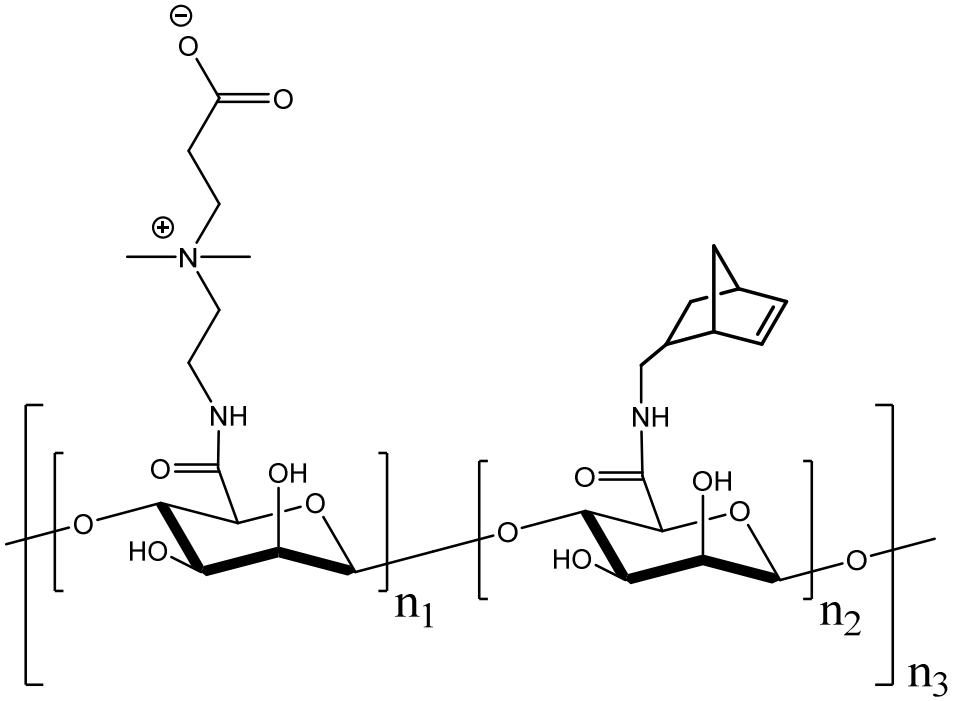
wherein n_1, n_2, and n_3 are any integer.

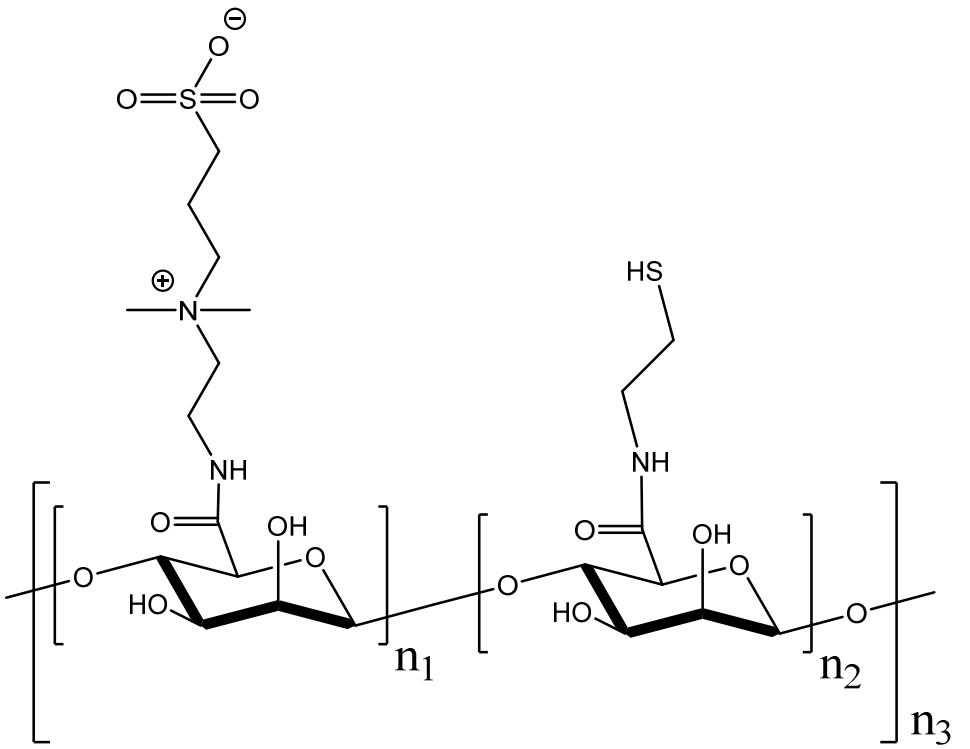
10. The polymer of claim 9, selected from the group consisting of:











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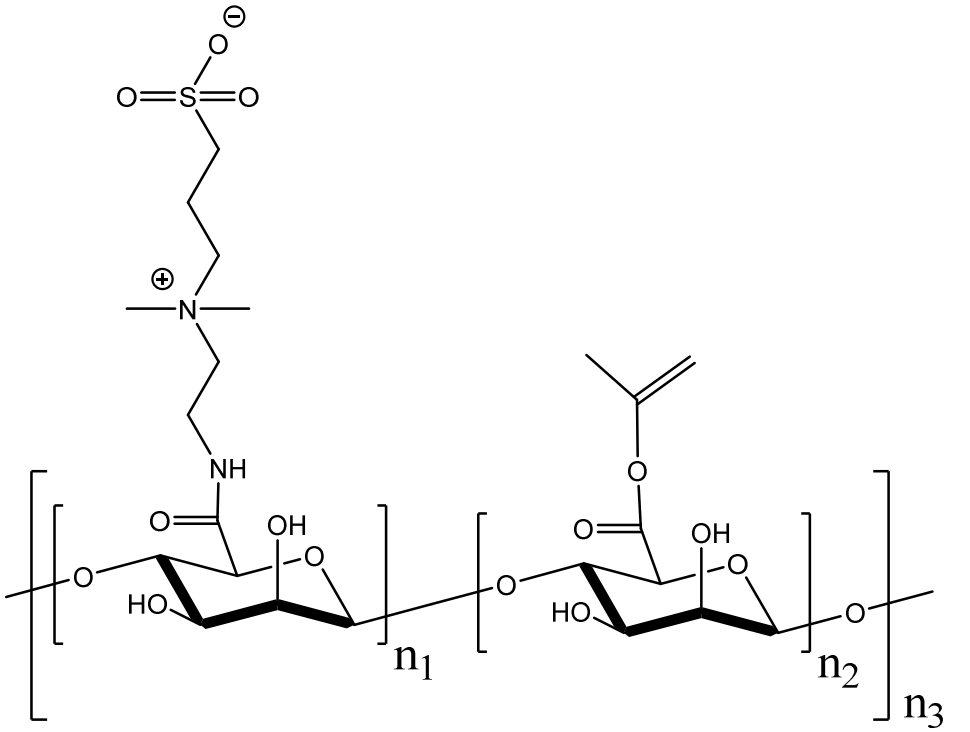

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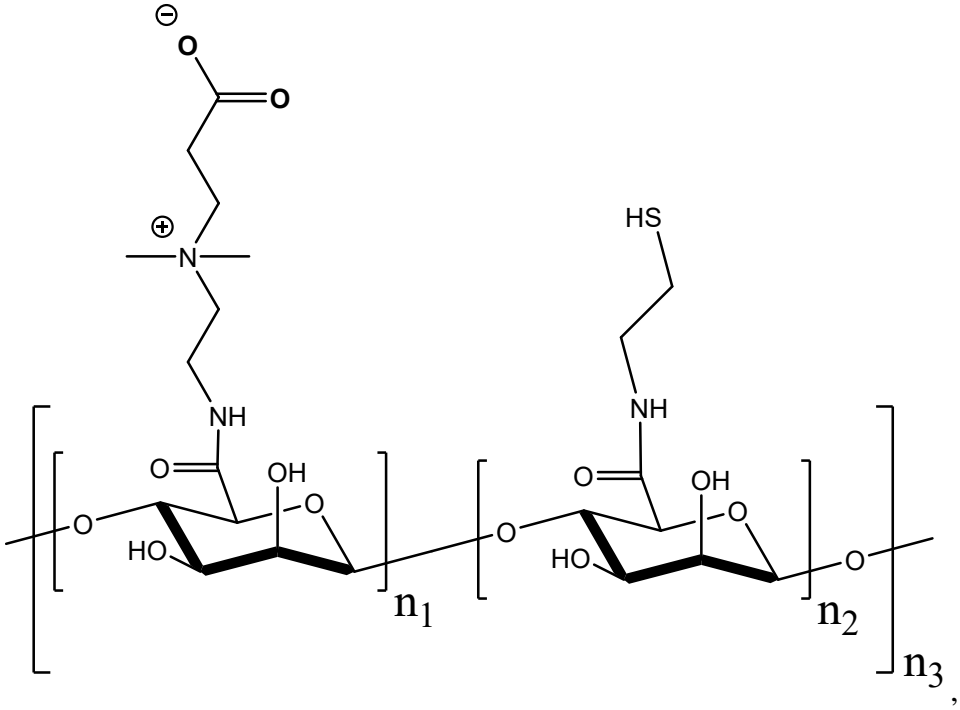
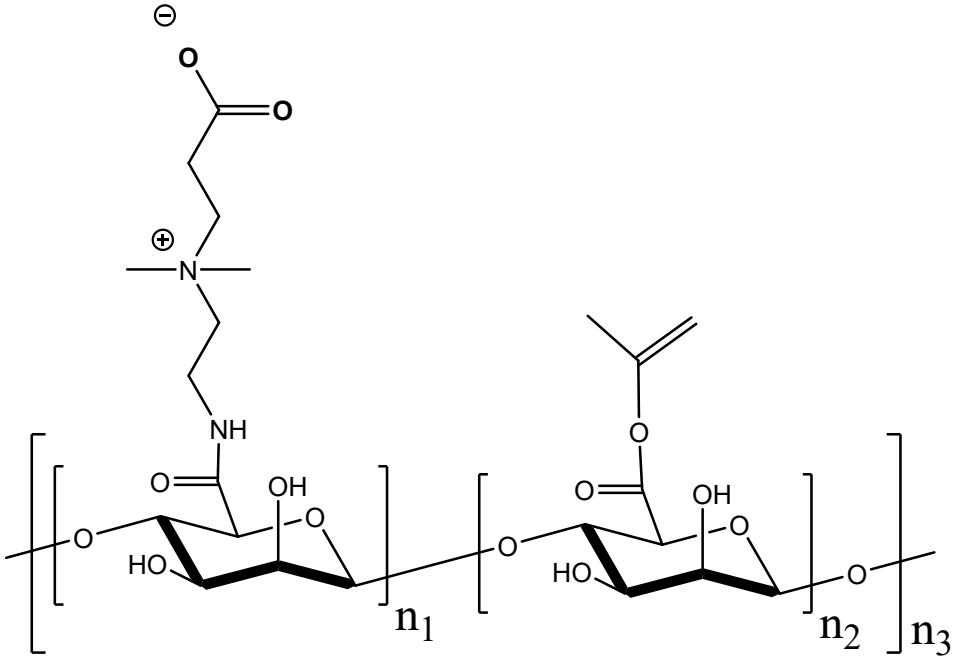


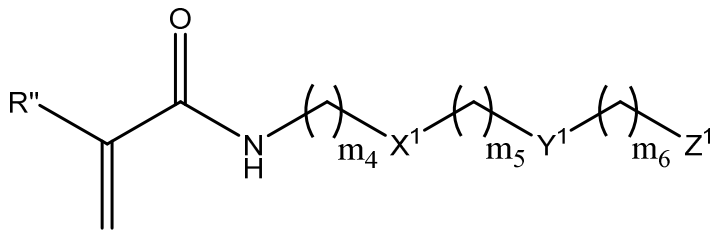
, and



, where n_1, n_2 and n_3 are any integer.

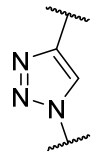
11. The polymer of claim 10, wherein each of n_1, n_2 and n_3 are independently selected from an integer of 5 to 10,000.

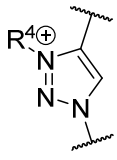
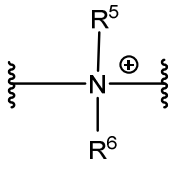
12. A monomer of Formula (III):

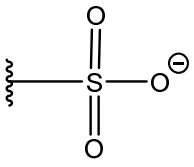
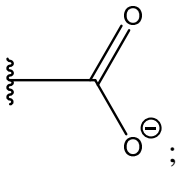


(III),

wherein

X^1 is absent or is  ;

Y^1 is  or  ;

Z^1 is  or  ;

m_4 is 1 to 50;

m_5 is 0 to 10;

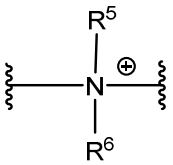
m_6 is 1 to 50;

R" is H or $C_{1\text{-}6}$ alkyl;

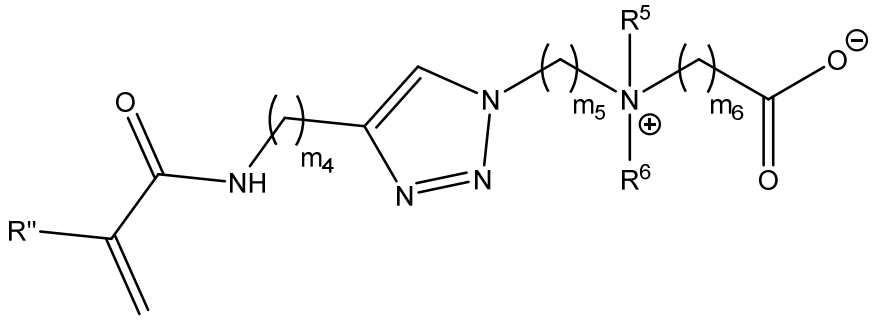
R^4 is $C_{1\text{-}20}$ alkyl;

R^5 is $C_{1\text{-}20}$ alkyl; and

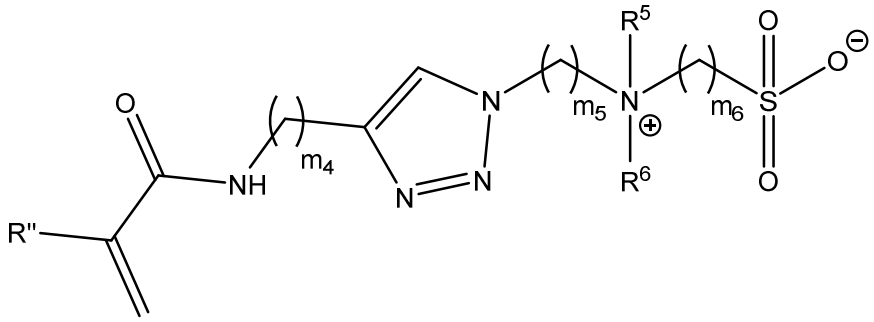
R^6 is $C_{1\text{-}20}$ alkyl,

with the proviso that when X^1 is absent, Y^1 is not  .

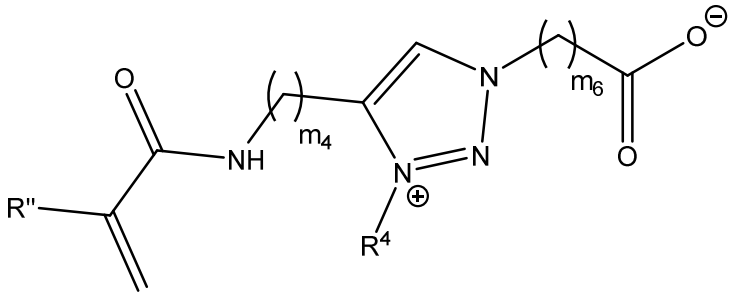
13. The monomer of claim 12, which has Formula (IIIa), (IIIb), or (IIIc):



(IIIa),

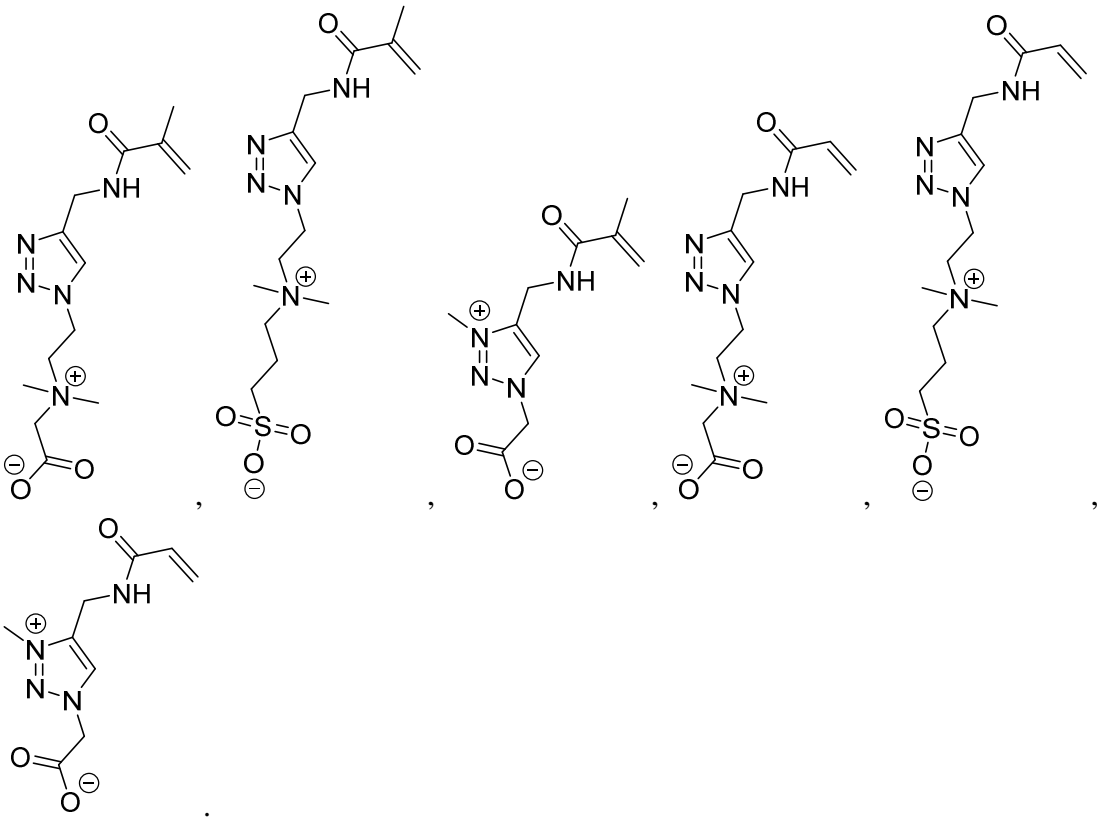


(IIIb),



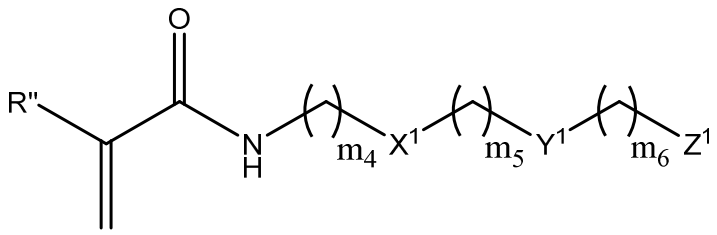
(IIIc).

14. The monomer of claim 12, selected from the group consisting of:



, and

15. A polymeric network comprising crosslinked monomers of Formula (III):



(III).

16. The polymeric network of claim 15, wherein the monomers are cross-linked with a carboxybetaine diacrylamide cross-linker (CBAAX), and/or

(i) the crosslinked monomers of the network are the same, or

(ii) the crosslinked monomers of the network are different.

17. A hydrogel comprising a polymer according to any one of claims 4-11, or a polymeric network according to claim 15 or 16.

18. A capsule comprising:

the hydrogel of claim 17; and

a therapeutic agent encapsulated in said hydrogel.

19. The capsule of claim 18, wherein:

(a) the therapeutic agent comprises a preparation of cells,

optionally wherein the capsule further comprises a preparation of cells encapsulated in the hydrogel, wherein the therapeutic agent is an agent that is released from the preparation of cells,

more optionally wherein the preparation of cells comprises a preparation of islets; and/or

(b) the therapeutic agent is selected from the group consisting of a therapeutic protein, peptide, antibody or binding fragment thereof, antibody mimetic, nucleic acid, small molecule, hormone, growth factor, angiogenic factor, cytokine, anti-inflammatory agent, and any combination thereof.

20. Use of a capsule according to claim 18 or 19 for the manufacture of a medicament for the treatment of diabetes.