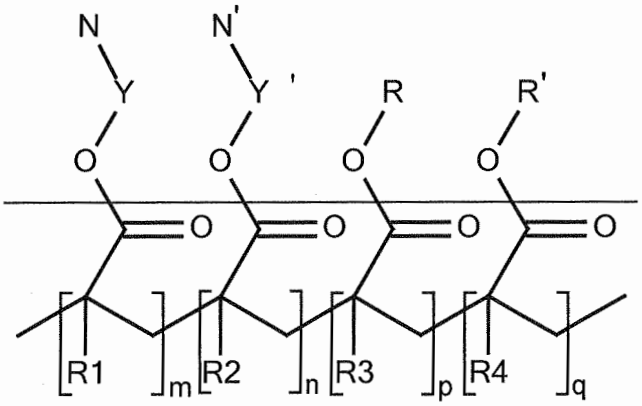
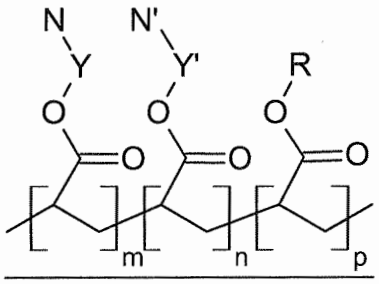
CLAIMS

1. A membrane active poly(acrylate) random copolymer having the structure represented by:





wherein:

N is $-NH_2$ or $-N-CO-O-C-(CH_3)_3$,

Y is $-(CH_2)_a-$ or $-(CH_2-CH_2-O)_b-(CH_2)_c-$ wherein *a* , *b*, and *c* are independently 1, 2, 3, 4, 5, or 6,

N' is $-NR^5H$, $-NR^5R^6$, $-NR^5R^6R^7$, nitrogen heterocycle, aldimine, hydrazide, hydrazone, or imidazole, wherein R^5, R^6, and R^7 are independently selected from $-CH_3$ and $-CH_2-CH_3$,

Y' is an uncharged linker group containing 1-12 carbon atoms, one or more of which may be substituted for heteroatoms,

R is a hydrophobic group having 2-6 carbon atoms or an alkoxy ethyl group,

~~R' is a hydrophobic group having 12-20 carbon atoms,~~

~~R1, R2, R3, and R4 are independently selected from hydrogen (—H) and methyl (—CH_3),~~

m and p are independently integers greater than zero (0),

n ~~and q are independently integers~~ is an integer greater than or equal to zero (0),

the ratio (m+n)/(p~~+q~~) is 0.67-5.7, and

~~the ratio (m+n+p)/(q) is greater than or equal to 19 when q is an integer greater than or equal to 1, and~~

the polydispersity of the poly(acrylate) random copolymer is less than 1.5.

~~2. The poly(acrylate) random copolymer of claim 1 wherein R1 is a hydrogen.~~

~~3~~2. The poly(acrylate) random copolymer of claim ~~2~~1 wherein Y is $-(CH_2)_a-$ wherein *a* is 2, 3, or 4.

~~4~~3. The poly(acrylate) random copolymer of claim ~~2~~1 wherein Y is $-CH_2-CH_2-O-(CH_2)_2-$.

~~5~~4. The poly(acrylate) random copolymer of any of claims ~~2~~1, 2, or 3 wherein R is selected from the group consisting of:

$-(CH_2)_k-CH_3$ wherein *k* is 1, 2, or 3, and

$-CH(CH_3)-CH_2-CH_3$~~, and~~

~~$-(CH_2)_l-O-CH_2-CH_3$ wherein and *l* is 2, 3, or 4~~.

~~6~~5. The poly(acrylate) random copolymer of any of claims ~~5~~1-3 wherein R is

~~$-CH_2-CH_2-O-CH_2-CH_3$~~ $-(CH_2)_l-O-CH_2-CH_3$ wherein and *l* is 2, 3, or 4

~~7~~6. The poly(acrylate) random copolymer of claim ~~2~~5 wherein ~~n is zero~~ R is $-CH_2-CH_2-O-CH_2-CH_3$.

~~8~~7. The poly(acrylate) random copolymer of any of claims ~~7~~1-6 wherein ~~q~~n is zero.

~~9. The poly(acrylate) random copolymer of claim 2 wherein R3 is hydrogen.~~

~~10~~8. The poly(acrylate) random copolymer of any of claims ~~9~~1-7 wherein (m+n)/(p~~+q~~) is 1-1.86.

~~11. The poly(acrylate) random copolymer of claim 2 wherein R3 is methyl.~~

~~12~~9. The poly(acrylate) random copolymer of any of claims ~~9~~1-7 wherein (m+n)/(p~~+q~~) is 1.86-3.

~~13~~10. The poly(acrylate) random copolymer of claim 1 wherein:

Y is $-(CH_2-CH_2-O)-CH_2-CH_2-$,

R is $-CH_2-CH_2-CH_3$,

~~R1 is hydrogen~~

~~R3 is methyl,~~

n ~~and q are both~~ is zero,

and m/p is 2.2-3.

~~14~~11. The poly(acrylate) random copolymer of claim 1 wherein:

Y is $-(CH_2-CH_2-O)-CH_2-CH_2-$,

R is $-CH_2-CH_2-CH_3$,

~~R1 and R3 are both hydrogen~~

n ~~and q are both~~ is zero,

and m/p is 1-1.86.

~~15~~12. The poly(acrylate) random copolymer of claim 1 wherein:

Y is $-(CH_2-CH_2-O)-CH_2-CH_2-$,

R is $-CH_2-CH_2-CH_2-CH_3$,

~~R1 and R3 are both hydrogen~~

n ~~and q are both~~ is zero,

and m/p is 1-1.86.

~~16~~13. The poly(acrylate) random copolymer of any of claims 1-12 wherein the polymer is conjugated to an RNA interference polynucleotide.

~~17~~14. The poly(acrylate) random copolymer of any of claims 1-13 wherein greater than 50% of N are reversibly modified by reaction with disubstituted maleic anhydride masking agents~~, dipeptide-amidobenzyl-carbonate masking agents, or a combination of disubstituted maleic anhydride masking agents and dipeptide-amidobenzyl-carbonate masking agents~~.

~~18~~15. The poly(acrylate) random copolymer of any of claims 1-13 wherein greater than 50% of N are reversibly modified by reaction with dipeptide-amidobenzyl-carbonate masking agents. ~~A composition for inhibiting gene expression in vivo comprising the poly(acrylate) random copolymer of claim 17 and an RNA interference polynucleotide in a pharmaceutically acceptable carrier.~~

~~19~~16. The poly(acrylate) random copolymer of any of claims 1-13 wherein greater than 50% of N are reversibly modified by reaction with a combination of disubstituted maleic anhydride masking agents and dipeptide-amidobenzyl-carbonate masking agents. ~~The composition of claim 18 wherein the RNA interference polynucleotide is covalently linked to the poly(acrylate) random copolymer.~~

~~20~~17. A composition for inhibiting gene expression in vivo comprising the poly(acrylate) random copolymer of any of claims 1-13 and an RNA interference polynucleotide in a pharmaceutically acceptable carrier. ~~The composition of claim 18 wherein the RNA interference polynucleotide is conjugated to a hydrophobic group containing at least 20 carbon atoms.~~

18. The composition of claim 17 wherein the RNA interference polynucleotide is covalently linked to the poly(acrylate) random copolymer.

19. The composition of claim 17 wherein the RNA interference polynucleotide is conjugated to a hydrophobic group containing at least 20 carbon atoms.

20. Use of the copolymer of claim 13 in the preparation of a composition for inhibiting gene expression in vivo.