WHAT IS CLAIMED IS:

1. An isolated peptide comprising:

(i) a 10 to 28- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (II):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24} (SEQ ID NO:25)

wherein:

X_1 is Ser (S);

X_2 is Arg (R);

X_3 is Val (V);

X_4 is Leu (L);

X_5 is Glu (E);

X_6 is Arg (R);

X_7 is Tyr (Y);

X_8 is Leu (L);

X_9 is Leu (L);

X_{10} is Glu (E);

X_{11} is Ala (A);

X_{12} is a positively charged amino acid;

X_{13} is a negatively charged amino acid;

X_{14} is Ala (A);

X_{15} is Glu (E);

X_{16} is Asn (N);

X_{17} is Ile (I);

X_{18} is Thr (T);

X_{19} is Thr (T);

X_{20} is Gly (G);

X_{21} is Cys (C);

X_{22} is Ala (A);

X_{23} is Glu (E);

X_{24} is His (H); or

(ii) a deleted form of structural formula (II) in which at least one and up to 14 of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} are deleted; or

(iii) an altered form of structural formula (II) or a deleted form thereof in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} is conservatively substituted with another residue.

2. The isolated peptide of claim 1, wherein the peptide has the amino acid sequence:

Peptide I SRVLERYLLEAKEAENITTGCAEH (SEQ ID NO: 26).

3. An isolated peptide comprising:

(i) a 10 to 28- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (III):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24} (SEQ ID NO:27)

wherein:

X_1 is Pro (P), Lys (K), or Ser (S);

X_2 is Pro (P), Glu (E), or Gln (Q);

X_3 is Arg (R), Ala (A), or Pro (P);

X_4 is Leu (L), Glu (E), or Trp (W);

X_5 is Ile (I), Asn (N), or Glu (E);

X_6 is Cys (C), Ile (I), or Pro (P);

X_7 is Asp (D), Thr (T), Leu (L), or Ala (A);

X_8 is Ser (S), Thr (T), Gln (Q), or Asp (D);

X_9 is Arg (R), Gly (G), or Leu (L);

X_{10} is Val (V), Cys (C), His (H), or Glu (E);

X_{11} is Leu (L), Ala (A), Val (V);

X_{12} is a negatively charged amino acid;

X_{13} is a positively charged amino acid;

X_{14} is Tyr (Y), Cys (C), Ala (A), or Ile (I);

X_{15} is Leu (L), Ser (S), Val (V), or Gly (G);

X_{16} is Leu (L), Ser (S), or Ala (A);

X_{17} is Glu (E), Asn (N), or Gly (G);

X_{18} is Ala (A), Glu (E), or Leu (L);

X_{19} is Lys (K), Asn (N), or Arg (R);

X_{20} is Glu (E), Ile (I), or Ser (S);

X_{21} is Ala (A), Thr (T), or Leu (L);

X_{22} is Glu (E), Val (V), or Thr (T);

X_{23} is Asn (N), Pro (P), or Thr (T);

X_{24} is Ile (I), Asp (D), or Leu (L); or

(ii) a deleted form of structural formula (III) in which at least one and up to 14 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} are deleted; or

(iii) an altered form of structural formula (III) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} is conservatively substituted with another residue.

4. The isolated peptide of claim 3, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide J	PPRLICDSRVLERYLLEAKEAENI	(SEQ ID NO: 28);
Peptide K	KEAENITTGCAEHCSLNENITVPD	(SEQ ID NO: 29);
Peptide L	SQPWEPLQLHVDKAVSGLRSLTTL	(SEQ ID NO: 30); and
Peptide H	ADRELEKIGA	(SEQ ID NO: 18).

5. An isolated peptide comprising:

(i) a 10 to 28- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (IV):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24}- X_{25} (SEQ ID NO:31)

wherein:

X_1 is His (H);

X_2 is Cys (C);

X_3 is Ser (S);

X_4 is Leu (L);

X_5 is Ala (A) or Asn (N);

X_6 is Pro (P) or Glu (E);

X_7 is Pro (P) or Asn (N);

X_8 is Arg (R) or Ile (I);

X_9 is Leu (L) or Thr (T);

X_{10} is Ile (I) or Val (V);

X_{11} is Cys (C) or Pro (P);

X_{12} is a negatively charged amino acid;

X_{13} is a polar amino acid;

X_{14} is a positively charged amino acid;

X_{15} is Val (V);

X_{16} is Leu (L) or Asn (N);

X_{17} is Glu (E) or Phe (F);

X_{18} is Arg (R) or Tyr (Y);

X_{19} is Tyr (Y) or Ala (A);

X_{20} is Leu (L) or Trp (W);

X_{21} is Leu (L) or Lys (K);

X_{22} is Glu (E) or Arg (R);

X_{23} is Ala (A) or Met (M);

X_{24} is Lys (K) or Glu (E);

X_{25} is Glu (E) or Val (V); or

(ii) a deleted form of structural formula (IV) in which at least one and up to 15 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, and X_{25} are deleted; or

(iii) an altered form of structural formula (IV) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, and X_{25} is conservatively substituted with another residue.

6. The isolated peptide of claim 5, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide M	APPRLICDSRVLERYLLEAKE	(SEQ ID NO: 32); and
Peptide N	HCSLNENITVPDTKVNFYAWKRMEV	(SEQ ID NO: 33).

7. An isolated peptide comprising:

(i) a 10 to 28- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (I):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- $(Z)_n$- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24} (SEQ ID NO:15)

wherein: n is1-4;

X_1 is Cys (C) or Pro (P);

X_2 is Asp (D) or Pro (P);

X_3 is Ser (S) or Arg (R);

X_4 is Arg (R) or Leu (L);

X_5 is Val (V) or Ile (I);

X_6 is Leu (L) or Cys (C);

X_7 is Glu (E) or Asp (D);

X_8 is Arg (R) or Ser (S);

X_9 is Tyr (Y) or Arg (R);

X_{10} is Leu (L) or Val (V);

X_{11} is Leu (L) or Ala (A);

X_{12} is a negatively charged amino acid;

each Z is independently any amino acid;

X_{13} is a negatively charged amino acid;

X_{14} is Ala (A) or Leu (L);

X_{15} is Glu (E) or Lys (K);

X_{16} is Asn (N), Glu (E), or Lys (K);

X_{17} is Ile (I) or Ala (A);

X_{18} is Thr (T), Glu (E), or Gly (G);

X_{19} is Thr (T), Asn (N), or Ala (A);

X_{20} is Gly (G) or Ile (I);

X_{21} is Cys (C) or Thr (T);

X_{22} is Ala (A) or Thr (T);

X_{23} is Glu (E) or Gly (G);

X_{24} is His (H) or Cys (C); or

(ii) a deleted form of structural formula (I) in which at least one and up to 18 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, $(Z)_n$, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} are deleted; or

(iii) an altered form of structural formula (I) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, $(Z)_n$, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} is conservatively substituted with another residue.

8. The isolated peptide of claim 7, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide F	CDSRVLERYLLEAKEAENITTGCAEH	(SEQ ID NO: 16);
Peptide G	PPRLICDSRVLERYLLEAKEAENITTGC	(SEQ ID NO: 17); and
Peptide H	ADRELEKIGA	(SEQ ID NO: 18).

9. An isolated peptide comprising:

(i) a 9 to 29- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (VII):

X_1- X_2- X_3- X_4 (SEQ ID NO:184)

wherein:

X_1 is Leu (L), Ile (I), Gly (G), Val (V), Phe (F), Pro (P), or Ala (A);

X_2 is a positively charged amino acid;

X_3 is a negatively charged amino acid;

X_4 is Phe (F), Gly (G), Val (V), Leu (L), Ala (A), or Tyr (Y); or

(ii) a deleted form of structural formula (VI) in which at least one and up to two of residues X_1, X_2, X_3, and X_4 are deleted; or

(iii) an altered form of structural formula (VI) in which at least one and up to two of residues X_1, X_2, X_3, and X_4 is conservatively substituted with another residue.

10. The isolated peptide of claim 9, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide EL	IITFESFKENLKDFLLVIPFDCWE	(SEQ ID NO: 185);
Peptide EM	TAAPTRHPIHIKDGDWNEFRRKLT	(SEQ ID NO: 186);
Peptide EN	VDVTYGPDTSGKDVFQKKKLGCQL	(SEQ ID NO: 187);
Peptide EO	SGKDVFQKQGQSVQ	(SEQ ID NO: 188);
Peptide EP	QELSQWTVRSIHDLRFISSHQTGI	(SEQ ID NO: 189);
Peptide EQ	WSELTAEQELQRVAREVH	(SEQ ID NO: 190);
Peptide ER	GASDSNVYDLLKDLEEGIQTLMGR	(SEQ ID NO: 191);

Peptide ES	GICRNRVTNNVKDVTKLVANLPKD	(SEQ ID NO: 192);
Peptide ET	FRIFNRSIDAFKDFVVASEETSDCV	(SEQ ID NO: 193);
Peptide EU	VIQISNDLENLRDLLHVLAFSKSC	(SEQ ID NO: 194);
Peptide EV	THFPGNLPNMLRDLRDAFSRVKTF	(SEQ ID NO: 195);
Peptide EW	PGNLPNMLRDLRDAFSRVKTFFQM	(SEQ ID NO: 196);
Peptide EX	LAQSKNFHLRPRDLISNINVIVLE	(SEQ ID NO: 197);
Peptide EY	QDPYVKEAENLKKYFNAG	(SEQ ID NO: 198);
Peptide EZ	VTDLNVQRKAIHELIQVMAELSPA	(SEQ ID NO: 199);
Peptide FA	PGGAARCQVTLRDLFDRAVVLSHY	(SEQ ID NO: 200);
Peptide FB	WGLAGLNSCPVKEANQSTLENFLE	(SEQ ID NO: 201);
Peptide FC	DMTTHLILRSFKEFLQSSLRALRQ	(SEQ ID NO: 202);
Peptide FD	GPVPPSTALRELIEELVNITQN	(SEQ ID NO: 203);
Peptide FE	KDLLLHLKKLFREGRFN	(SEQ ID NO: 204);
Peptide FF	RDTKIEVAQFVKDLLLHLKKLFRE	(SEQ ID NO: 205);
Peptide FG	LDQIPGYLNRIHELLNGTRGLFPG	(SEQ ID NO: 206);
Peptide FH	SPISSDFAVKIRELSDYLLQDYPV	(SEQ ID NO: 207); and
Peptide FI	YYGRILHYLKAKEYSHCAWTIVRV	(SEQ ID NO: 208).

11. An isolated peptide comprising:

(i) a 9 to 29- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (VIII):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24} (SEQ ID NO:209)

wherein:

X_1 is Ala (A), Thr (T), Ser (S), Tyr (Y), Leu (L), Val (V), Ile (I), Phe (F), or Glu (E);

X_2 is any amino acid;

X_3 is Ser (S), Gln (Q), Asp (D), Leu (L), Glu (E), Cys (C), Asn (N), Arg (R), or Ala (A);

X_4 is Pro (P), Gly (G), Gln (Q), Leu (L), Thr (T), Asn (N), Ser (S), Phe (F), or Ile (I);

X_5 is any amino acid;

X_6 is Pro (P), Ser (S), Cys (C), Val (V), Lys (K), Thr (T), Leu (L), Ile (I), or Gln (Q);

X_7 is any amino acid;

X_8 is Thr (T), Pro (P), Leu (L), Arg (R), Gly (G), Tyr (Y), Gln (Q), Glu (E), Ile (I), or Ala (A);

X_9 is any amino acid;

X_{10} is Pro (P), Asn (N), Glu (E), Asp (D), Thr (T), Leu (L), Ile (I), Gln (Q), Phe (F), or Trp (W);

X_{11} is Trp (W), Leu (L), Ala (A), Met (M), Val (V), Ile (I), Phe (F), or Tyr (Y);

X_{12} is a negatively charged amino acid;

X_{13} is a positively charged amino acid;

X_{14} is Val (V), Leu (L), Ala (A), or Phe (F);

X_{15} is any amino acid;

X_{16} is any amino acid;

X_{17} is any amino acid;

X_{18} is any amino acid;

X_{19} is any amino acid;

X_{20} is any amino acid;

X_{21} Arg (R), Asp (D), Tyr (Y), Val (V), Ile (I), Leu (L), Lys (K), Ser (S), or Thr (T);

X_{22} is any amino acid;

X_{23} is any amino acid;

X_{24} is Leu (L), Pro (P), Phe (F), Arg (R), Tyr (Y), Cys (C), Gly (G), Val (V), or Lys (K); or

(ii) a deleted form of structural formula (VIII) in which at least one and up to 15 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} are deleted; or

(iii) an altered form of structural formula (VIII) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, and X_{24} is conservatively substituted with another residue.

12. The isolated peptide of claim 11, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide FJ	ARSPSPSTQPWEHVNAIQEARRLL	(SEQ ID NO: 210);
Peptide FK	ITFEKLVIP	(SEQ ID NO: 211);
Peptide FL	TAQGEPFPNNLDKLCGPNVTDFPP	(SEQ ID NO: 212);
Peptide FM	STDQWSELTEAERLQENLQAYRTF	(SEQ ID NO: 213);
Peptide FN	YGLLYCFRKDMDKVETFLRIVQCR	(SEQ ID NO: 214);
Peptide FO	LESQTVQGGTVERLFKNLSLIKKY	(SEQ ID NO: 215);

Peptide FP	VQLSDSLTDLLDKFSNISEGLSNY	(SEQ ID NO: 216);
Peptide FQ	ISEGLSNYSIIDKLVNIVDDLVEC	(SEQ ID NO: 217);
Peptide FR	SSSTKKTQLQLEHLLLDLQMILNG	(SEQ ID NO: 218);
Peptide FS	FNSNKKKRDDFEKLTNYSVTDLNV	(SEQ ID NO: 219);
Peptide FT	ARCQVTLRDLFDRAVVLSHYIHNL	(SEQ ID NO: 220);
Peptide FU	LDRVYNEEKRYTH	(SEQ ID NO: 221);
Peptide FV	EANQSTLENFLERLKTIMREKYSK	(SEQ ID NO: 222);
Peptide FW	LERSGLNIEDLEKLQMARPNILGL	(SEQ ID NO: 223);
Peptide FX	LWRLVLAQRWMERLKTVAGSKMQG	(SEQ ID NO: 224);
Peptide FY	TVAGSKMQGLLERVNTEIHFVTKC	(SEQ ID NO: 225);
Peptide FZ	LHAFRIRAVTIDRVMSYLNAS	(SEQ ID NO: 226); and
Peptide GA	LQRIHQGLIFYEKLLGSDIFTGEP	(SEQ ID NO: 227).

13. An isolated peptide comprising:

(i) a 9 to 29- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (IX):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24}- X_{25} (SEQ ID NO:228)

wherein:

X_1 is Cys (C), Glu (E), Tyr (Y), or Ala (A);

X_2 is Ser (S), Leu (L), or Glu (E);

X_3 is Arg (R), Met (M), Gln (Q), or Asn (N);

X_4 is Ser (S), Ile (I), or Leu (L);

X_5 is Ile (I), Leu (L), or Lys (K);

X_6 is Trp (W), Leu (L), or Lys (K);

X_7 is Leu (L), Glu (E), Phe (F), or Tyr (Y);

X_8 is Ala (A), Tyr (Y), Asn (N), or Phe (F);

X_9 is Arg (R), Lys (K), Pro (P), or Asn (N);

X_{10} is Lys (K), Ile (I), Leu (L), or Ala (A);

X_{11} is Ile (I), Pro (P), Val (V), or Gly (G);

X_{12} is a positively charged amino acid;

X_{13} is a polar amino acid;

X_{14} is a negatively charged amino acid;

X_{15} is Leu (L), Ala (A), Gly (G), or Val (V);

X_{16} is Thr (T), Asp (D), Ile (I), or Ala (A);

X_{17} is Ala (A), Gly (G), Cys (C), or Asp (D);

X_{18} is Leu (L), Met (M), Arg (R), or Asn (N);

X_{19} is Thr (T), Pro (P), Asn (N), or Gly (G);

X_{20} is Glu(E), Ile (I), Arg (R), or Thr (T);

X_{21} is Ser (S), Asn (N), Val (V), or Leu (L);

X_{22} is Tyr (Y), Val (V), Thr (T), Phe (F);

X_{23} is Val (V), Gly (G), Asn (N), or Leu (L);

X_{24} is Lys (K), Asp (D), Asn (N), or Gly (G);

X_{25} is His (H), Gly (G), Val (V), or Ile (I); or

(ii) a deleted form of structural formula (IX) in which at least one and up to 16 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, and X_{25} are deleted; or

(iii) an altered form of structural formula (IX) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, and X_{25} is conservatively substituted with another residue.

14. The isolated peptide of claim 13, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide GB	CSRSIWLARKIRSDLTALTESYVKH	(SEQ ID NO: 229);
Peptide GC	ELMILLEYKIPRNEADGMPINVGDG	(SEQ ID NO: 230);
Peptide GD	YLQLLLFNPLVKTEGICRNRVTNNV	(SEQ ID NO: 231); and
Peptide GE	AENLKKYFNAGHSDVADNGTLFLGI	(SEQ ID NO: 232).

15. An isolated peptide comprising:

(i) a 9 to 29- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (X):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19}- X_{20}- X_{21}- X_{22}- X_{23}- X_{24}- X_{25} (SEQ ID NO:233)

wherein:

X_1 is Leu (L);

X_2 is Gly (G);

X_3 is Cys (C);

X_4 is Val (V);

X_5 is Leu (L);

X_6 is His (H);

X_7 is Arg (R);

X_8 is Leu (L);

X_9 is Ala (A);

X_{10} is Asp (D);

X_{11} is Leu (L);

X_{12} is a negatively charged amino acid;

X_{13} is a polar amino acid;

X_{14} is a positively charged amino acid;

X_{15} is Leu (L);

X_{16} is Pro (P);

X_{17} is Lys (K);

X_{18} is Ala (A);

X_{19} is Gln (Q);

X_{20} is Asp (D);

X_{21} is Leu (L);

X_{22} is Glu (E);

X_{23} is Arg (R);

X_{24} is Ser (S);

X_{25} is Gly (G); and

(ii) a deleted form of structural formula (X) in which at least one and up to 16 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, and X_{25} are deleted; or

(iii) an altered form of structural formula (X) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, and X_{25} is conservatively substituted with another residue.

16. The isolated peptide of claim 15, wherein the peptide has the amino acid sequence:

Peptide GF LGCVLHRLADLEQRLPKAQDLERSG (SEQ ID NO: 234).

17. An isolated peptide comprising:

(i) a 9 to 29- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (V):

X_1- X_2- X_3- X_4- X_5- X_6- X_7- X_8- X_9- X_{10}- X_{11}- X_{12}- X_{13}- X_{14}- X_{15}- X_{16}- X_{17}- X_{18}- X_{19} (SEQ ID NO:119)

wherein:

X_1 is Trp (W), Val (V), Ala (A), Ile (I), Pro (P), Leu (L), Ser (S), Asp (D), or Thr (T);

X_2 is any amino acid;

X_3 is any amino acid;

X_4 is any amino acid;

X_5 is any amino acid;

X_6 is any amino acid;

X_7 is any amino acid;

X_8 is Ile (I), Phe (F), Leu (L), Val (V), Pro (P), Tyr (Y), or Gly (G);

X_9 is a negatively charged amino acid;

X_{10} is a negatively charged amino acid;

X_{11} is Ile (I), Leu (L), Ala (A), Gly (G), Phe (F), Val (V), or Pro (P);

X_{12} is Ile (I), Met (M), Tyr (Y), Ser (S), Val (V), Phe (F), Lys (K), Leu (L), Glu (E), or Asp (D);

X_{13} is any amino acid;

X_{14} is His (H), Leu (L), Pro (P), Thr (T), Arg (R), Cys (C), Ile (I), Tyr (Y), Gln (Q), or Ala (A);

X_{15} is Leu (L), Lys (K), Thr (T), Val (V), Phe (F), Ala (A), or Gln (Q);

X_{16} is Lys (K), Glu (E), Met (M), Gly (G), Asn (N), Gln (Q), Thr (T), or Val (V);

X_{17} is any amino acid;

X_{18} is Pro (P), Lys (K), Arg (R), Ile (I), Asn (N), Ser (S), Gln (Q), or Phe (F);

X_{19} is Pro (P), Ile (I), Tyr (Y), Leu (L), Phe (F), Ser (S), Ala (A), Asp (D), Asn (N), or Lys (K); or

(ii) a deleted form of structural formula (V) in which at least one and up to 10 residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, and X_{19} are deleted; or

(iii) an altered form of structural formula (V) in which at least one and up to eight of residues X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, and X_{19} is conservatively substituted with another residue.

18. The isolated peptide of claim 17, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide CA	KTSWVNCSNMIDEIITHLKQPPLP	(SEQ ID NO: 124);
Peptide CB	LLQVAAFAYQIEELMILLEYKIPR	(SEQ ID NO: 125);
Peptide CC	HQLAFDTYQEFEEAYIPKEQKYSF	(SEQ ID NO: 126);
Peptide CD	DSNVYDLLKDLEEGIQTLMGRLED	(SEQ ID NO: 127);
Peptide CE	EEGIQTLMGRLEDGSPRTGQIFKQ	(SEQ ID NO: 128);
Peptide CF	SNVDKETGEDG	(SEQ ID NO: 129);
Peptide CG	YSIIDKLVNIVDDLVECVKENSSK	(SEQ ID NO: 130);
Peptide CH	FKSPEPRLFTPEEFFRIFNRSIDA	(SEQ ID NO: 131);
Peptide CI	LDNLLLKESLLEDFKGYLGCQALS	(SEQ ID NO: 132);
Peptide CJ	QALSEMIQFYLEEVMPQAENQDPD	(SEQ ID NO: 133);
Peptide CK	LQCLEEELKPLEEVLNLAQSKNFH	(SEQ ID NO: 134);
Peptide CL	AQDLERSGLNIEDLEKLQMARPNI	(SEQ ID NO: 135);
Peptide CM	VPPSTALRELIEELVNITQNQKAP	(SEQ ID NO: 136);
Peptide CN	IFLDQNMLAVIDELMQALNFNSET	(SEQ ID NO: 137);
Peptide CO	NSETVPQKSSLEEPDFYKTKIKLC	(SEQ ID NO: 138);
Peptide CP	FMMALCLSSIYEDLKMYQVEFKTM	(SEQ ID NO: 137); and
Peptide CQ	CLKDRMNFDIPEEIKQLQQFQKED	(SEQ ID NO: 136).

19. An isolated peptide comprising:

(i) a 9 to 29- residue peptide or peptide analog which has tissue protective activity in a responsive cell, tissue, or organ and which comprises the structural formula (VI):

X_1- X_2- $(Z)_n$- X_3- X_4 (SEQ ID NO:137)

wherein: n is 1-5;

X_1 is Phe (F), Val (V), Ala (A), Gly (G), Pro (P), Leu (L), Tyr (Y), Ile (I), Cys (C) or Met (M);

X_2 is a negatively charged amino acid;

each Z is independently any amino acid;

X_3 is a negatively charged amino acid;

X_4 is Pro (P), Met (M), Val (V), Ile (I), Phe (F), Gly (G), Leu (L), Ala (A), Tyr (Y), or Trp (W); or

(ii) a deleted form of structural formula (VI) in which at least one and up to two residues X_1, X_2, $(Z)_n$, X_3, and X_4 are deleted; or

(iii) an altered form of structural formula (VI) in which at least one and up to eight of residues X_1, X_2, $(Z)_n$, X_3, and X_4 is conservatively substituted with another residue.

20. The isolated peptide of claim 19, wherein the peptide has an amino acid sequence selected from the group consisting of:

Peptide CR	NETVEVISEMFDLQEPTCLQTRLELY	(SEQ ID NO: 138);
Peptide CS	NLKDFLLVIPFDCWEPVQE	(SEQ ID NO: 139);
Peptide CT	RDTAAEMNETVEVISEMFDLQEPTCLQ	(SEQ ID NO: 140);
Peptide CU	RLLNLSRDTAAEMNETVEVISEMFDLQEP	(SEQ ID NO: 141);
Peptide CV	LPLLDFNNLNGEDQDILMENNLRRPN	(SEQ ID NO: 142);
Peptide CW	PTRHPIHIKDGDWNEFRRKLTFYLKT	(SEQ ID NO: 143);
Peptide CX	HVGHVDVTYGPDTSGKDVFQKKKLGCGL	(SEQ ID NO: 144);
Peptide CY	KHQGLNKNINLDSADGMPVASTDQWS	(SEQ ID NO: 145);
Peptide CZ	WSELTAEQELQRVAREVH	(SEQ ID NO: 146);
Peptide DA	LRAHRLHQLAFDTYQEFEEAYIPKEQK	(SEQ ID NO: 147);
Peptide DB	LVYGASDSNVYDLLKDLEEGIQTLMGR	(SEQ ID NO: 148);
Peptide DC	SNVDKETGEDG	(SEQ ID NO: 149);
Peptide DD	QEERRRVNGFLDYLQEFLGVMNTEWII	(SEQ ID NO: 150);
Peptide DE	EEFFRIFNRSIDAFKDFVVASETSDCV	(SEQ ID NO: 151);
Peptide DF	SRNVIQISNDLENLRDLLHVLAFSKSC	(SEQ ID NO: 152);
Peptide DG	YSTVSGDWQLDL	(SEQ ID NO: 153);
peptide DH	QFYLEEVMPQAENQDPDIKAHVNSLG	(SEQ ID NO: 154);
peptide DI	QFYLEEVMPQAENQDPDIKAHVNSLGEN	(SEQ ID NO: 155);
peptide DJ	KATELKHLQCLEEELKPLEEVLNLA	(SEQ ID NO: 156);
peptide DK	SSSTKKTQLQLEHLLLDLQMILNGINNY	(SEQ ID NO: 157);
peptide DL	FKDDQSIQKSVETIKEDMNVKFFNSNKK	(SEQ ID NO: 158);
peptide DM	VEIEEQTKRLLEGMELIVSQVHPETK	(SEQ ID NO: 159);
peptide DN	GMELIVSQVHPETKENEIYPVWSGLPSL	(SEQ ID NO: 160);

peptide DO	PEAIVEERELSQV	(SEQ ID NO: 161);
peptide DP	HKCDITLQEIIKTLNSLTEQ	(SEQ ID NO: 162);
peptide DQ	AENNLNLPKMAEKDGCFQSGFNEET	(SEQ ID NO: 163);
peptide DR	TCLVKIITGLLEFEVYLEYLQNRFE	(SEQ ID NO: 164);
peptide DS	VPPGEDSKDVAAPHRQPLTS	(SEQ ID NO: 165);
peptide DT	RKETCNKSNMCESSKEALAENNLNLPK	(SEQ ID NO: 166);
peptide DU	LVKIITGLLEFEVYLEYLQNRFESSEE	(SEQ ID NO: 167);
peptide DV	TCLVKIITGLLEFEVYLEYLQNRFESSEE	(SEQ ID NO: 168);
peptide DW	IQFLQKKAKNLDAITTPDPTTNASLLTKL	(SEQ ID NO: 169);
peptide DX	RNNIYCMAQLLDNSDTAEPTKAGRGASQP	(SEQ ID NO: 170);
peptide DY	PLPTPVLLPAVDFSLGEWKTQMEETKAQ	(SEQ ID NO: 171);
peptide DZ	DFSLGEWKTQMEETKAQDILGAVTLLLEG	(SEQ ID NO: 172);
peptide EA	LEWKTQTDGLEGAAGQ	(SEQ ID NO: 173);
peptide EB	TVAGSKMQGLLERVNTEIHFVTKCAFQP	(SEQ ID NO: 174);
peptide EC	LEFYPCTSEEDHEDITKDKTSTVEA	(SEQ ID NO: 175);
peptide ED	NSETVPQKSSLEEPDFYKTKIKLCIL	(SEQ ID NO: 176);
peptide EE	EDITKDKTSTVEACLPLELTKNESCLNSR	(SEQ ID NO: 177);
peptide EF	TTNDVPHIQCGDGCDPQGLRDNSQFC	(SEQ ID NO: 178);
peptide EG	AWSAHPLVGHMDLREEGDEETTNDVPH	(SEQ ID NO: 179);
peptide EH	LVGHMDLREEGDEETTNDVPHIQCGDGCD	(SEQ ID NO: 180);
peptide EI	LQRIHQGLIFYEKLLGSDIFTGEPSLLPD	(SEQ ID NO: 181);
peptide EJ	NHLKTVLEEKLEKEDFTRGKLMSSLH	(SEQ ID NO: 182);

and

peptide EK	LEYCLKDRMNFDIPEEIKQLQQFQKED	(SEQ ID NO: 183).

21. An isolated peptide consisting of

Peptide IH	UEQLERALNSS	(SEQ ID NO. 282).

22. The isolated peptide of any of claims 1-20, wherein the amino acid sequence of structural formula (I), (II), (III), (IV), (V), (VI), (VII), (VIII), (IX), or (X) is found in the primary sequence of a type 1 cytokine.

23. The isolated peptide of claim 22, wherein the type 1 cytokine is erythropoietin, granulocyte-macrophage colony stimulating factor, interleukin-2, interleukin-3, interleukin-4,

interleukin-5, interleukin-6, interleukin-10, interleukin-13, leukemia inhibitory factor, ciliary neurotrophic factor, growth hormone, stem cell factor, Leptin, interferon gamma, prolactin, oncostatin M, thrombopoietin, Flt 3 ligand, interleukin-12 alpha subunit, interleukin-23 subunit p19, or interferon beta.

24. A pharmaceutical composition comprising the isolated peptide of any of claims 1-21 and a pharmaceutically acceptable carrier.

25. The pharmaceutical composition of claim 24, wherein the composition is formulated for oral, intranasal, ocular, inhalational, transdermal, rectal, sublingual, or parenteral administration.

26. The pharmaceutical composition of claim 24, wherein the composition is formulated as a perfusate solution.

27. A method of treating a subject suffering from a disease associated with tissue damage, the method comprising the step of administering to the subject an effective amount of the isolated peptide of any of claims 1-21 or the pharmaceutical compositions of any of claims 24-26.

28. The method of claim 27, wherein the disease associated with tissue damage is caused by cancer, ischemic, traumatic, toxic, or inflammatory injuries.

29. The method of claim 27, wherein the disease associated with tissue damage is a cardiovascular disease, cardiopulmonary disease, respiratory disease, kidney disease, disease of the urinary system, disease of the reproductive system, bone disease, skin disease, gastrointestinal disease, endocrine abnormality, metabolic abnormality, cognitive dysfunction, or a disease or disorder of the central or peripheral nervous system.

30. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide consisting of a sequence of no more than 30 amino acids and comprising the amino acid motif:

(a) H_1-N_1-$(X)_n$-N_2-H_2, wherein $_n$ is 0-5; (SEQ ID NO: 5)

(b) H_1-N_1-$(X)_n$-N_2-L_1, wherein $_n$ is 0-5; (SEQ ID NO: 12) or

(c) L_1-N_1-$(X)_n$-N_2-H_1, wherein $_n$ is 0-5; (SEQ ID NO: 13)

and wherein H_1 and H_2 are hydrophobic amino acids, N_1 and N_2 are negatively charged amino acids, X is any amino acid, and L_1 is a polar amino acid;

and wherein said peptide has cellular protective activity.

31. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide consisting of a sequence of no more than 30 amino acids and comprising the amino acid motif:

(a) H_1-N_1-$(L)_n$-P_1-H_2, wherein $_n$ is 0-1; (SEQ ID NO: 23) or

(b) H_1-P_1-$(L)_n$-N_1-H_2, wherein $_n$ is 0-1; (SEQ ID NO: 24)

and wherein H_1 and H_2 are hydrophobic amino acids, N_1 is a negatively charged amino acid, L_1 is a polar amino acid, and P_1 is a positively charged amino acid;

and wherein said peptide has cellular protective activity.

32. The method of claim 31, wherein the isolated peptide is:

Peptide D (APPRLICDSRVLERYLLEAKEAE, SEQ ID NO.:14),
Peptide A (NITVPDTKVNFYAWKRMEVG, SEQ ID NO.:2),
Peptide B (QQAVEVWQGLALLSEAVLRGQALLV, SEQ ID NO.:3),
Peptide C (GCAEHCSLNENITVPDTKVN, SEQ ID NO.: 4),
Peptide E (RYLLUNITTGC, SEQ ID NO.:15),
Peptide IC (QEQLERALNSS, SEQ ID NO.:281),
Peptide IS (CSLNENIQEQLERALNSS, SEQ ID NO.:296),
Peptide IQ (QEQLERALNSSLRRYINMLTRTR, SEQ ID NO.:294),
Peptide BV (WEHVNAIQEARRLL, SEQ ID NO.:114), or
Peptide BX (KIRSDLTALTESYVKH, SEQ ID NO.:116).

33. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

(i) an amino acid sequence having less than 90% sequence identity with any portion of SEQ ID NO:1 having the same number of amino acid residues as said peptide; and

(ii) the amino acid motif:

(a) H_1-N_1-$(X)_n$-N_2-H_2, wherein $_n$ is 0-5; (SEQ ID NO: 5)

(b) H_1-N_1-$(X)_n$-N_2-L_1, wherein $_n$ is 0-5; (SEQ ID NO: 12) or

(c) L_1-N_1-$(X)_n$-N_2-H_1, wherein $_n$ is 0-5; (SEQ ID NO: 13)

and wherein H_1 and H_2 are hydrophobic amino acids, N_1 and N_2 are negatively charged amino acids, X is any amino acid, and L_1 is a polar amino acid;

and wherein said peptide has cellular protective activity.

34. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

(i) an amino acid sequence having less than 90% sequence identity with any portion of SEQ ID NO:1 having the same number of amino acid residues as said peptide; and

(ii) the amino acid motif:

(a) H_1-N_1-$(L)_n$-P_1-H_2, wherein $_n$ is 0-1; (SEQ ID NO: 23) or

(b) H_1-P_1-$(L)_n$-N_1-H_2, wherein $_n$ is 0-1; (SEQ ID NO: 24)

and wherein H_1 and H_2 are hydrophobic amino acids, N_1 is a negatively charged amino acid, L_1 is a polar amino acid, and P_1 is a positively charged amino acid;

and wherein said peptide has cellular protective activity.

35. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide of a sequence of no more than 30 amino acids and comprising the amino acid motif:

(a) $H_1N_1N_2H_2$;

(b) $H_1N_1N_2L_1$; or

(c) $L_1N_1N_2H_1$,

that is formed as a result of the of the tertiary structure of said peptide such that the distance between the carbonyl carbons of N_1 and N_2 is about 3 Å to about 5 Å,

wherein H_1 and H_2 are hydrophobic amino acids, N_1 and N_2 are negatively charged amino acids, and L_1 is a polar amino acid;

and wherein said peptide has cellular protective activity.

36. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide consisting of a sequence of no more than 30 amino acids and comprising the amino acid motif:

(a) $H_1N_1(L)_nP_1H_2$, wherein $_n$ is 0-1; or

(b) $H_1P_1(L)_nN_1H_2$, wherein $_n$ is 0-1;

that is formed as a result of the of the tertiary structure of said peptide such that the distance between the carbonyl carbons of N_1 and P_1 is about 3 Å to about 5 Å, wherein H_1 and H_2 are hydrophobic amino acids, N_1 is a negatively charged amino acid, L_1 is a polar amino acid, and P_1 is a positively charged amino acid;

and wherein said peptide has cellular protective activity.

37. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

(i) an amino acid sequence having less than 90% sequence identity with any portion of SEQ ID NO:1 having the same number of amino acid residues as said peptide; and

(ii) the amino acid motif:

(a) $H_1N_1N_2H_2$;

(b) $H_1N_1N_2L_1$; or

(c) $L_1N_1N_2H_1$,

that is formed as a result of the of the tertiary structure of said peptide such that the distance between the carbonyl carbons of N_1 and N_2 is about 3 Å to about 5 Å, wherein H_1 and H_2 are hydrophobic amino acids, N_1 and N_2 are negatively charged amino acids, and L_1 is a polar amino acid;

and wherein said peptide has cellular protective activity.

38. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

(i) an amino acid sequence having less than 90% sequence identity with any portion of SEQ ID NO:1 having the same number of amino acid residues as said peptide; and

(ii) the amino acid motif:

(a) $H_1N_1(L)_nP_1H_2$, wherein $_n$ is 0-1; or

(b) $H_1P_1(L)_nN_1H_2$, wherein $_n$ is 0-1;

that is formed as a result of the of the tertiary structure of said peptide such that the distance between the carbonyl carbons of N_1 and P_1 is between about 3 Å and about 5 Å, wherein H_1 and H_2 are hydrophobic amino acids, N_1 is a negatively charged amino acid, L_1 is a polar amino acid, and P_1 is a positively charged amino acid;
and wherein said peptide has cellular protective activity.

39. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

X_1-X_2-X_3-X_4-X_5-X_6 (SEQ ID NO:34)

wherein X_1 is a charged amino acid residue, X_6 is a hydrophobic amino acid residue or A, and X_2, X_3, X_4 and X_5 is any amino acid residue.

40. The method of claim 39, wherein the isolated peptide is:

Peptide O:	DSRVLERYLLEAKE	(SEQ ID NO: 41);
Peptide P	NENITVPDTKVNFYAWKR	(SEQ ID NO: 42);
Peptide Q	QLHVDKAVSGLRSLTTLLRA	(SEQ ID NO: 43);
Peptide R	RVYSNFLRGKLKLYTGEA	(SEQ ID NO: 44);
Peptide GG	DLRVLSKLLRDSHV	(SEQ ID NO: 235);
Peptide GH	PTPVLLPAVDFSLGEWKTQM	(SEQ ID NO: 236);
Peptide GI	TAHKDPNAIFLSFQHLLRGKVRFL	(SEQ ID NO: 237);
Peptide GJ	PNRTSGLLETNFTAS	(SEQ ID NO: 238);
Peptide GK	PSTQPWEHVNAIQEARR	(SEQ ID NO: 239);
Peptide GL	NETVEVISE	(SEQ ID NO: 240);

Peptide GM QTRLELYKQGLRGSLTKLKGPLTM (SEQ ID NO: 241);

Peptide GN KDFLLVIPFDCWEPVQE (SEQ ID NO: 242

Peptide GO CSRSIWLARKIRSD (SEQ ID NO: 243);

Peptide GP NKNINLDSADGMPVASTD (SEQ ID NO: 244);

Peptide GQ LLQVAAFAYQIEELMILLEYK (SEQ ID NO: 245);

Peptide GR ELSQWTVRSIHDLRFISS (SEQ ID NO: 246);

Peptide GS SERIDKQIRYILDGIS (SEQ ID NO: 247);

Peptide GT AENNLNLPKMAEKD (SEQ ID NO: 248);

Peptide GU EEQARAVQMSTKVLIQ (SEQ ID NO: 249)

Peptide GV RSFKEFLQSSLR (SEQ ID NO: 250);

Peptide GW SCNMIDEIITHLKQ (SEQ ID NO: 251);

Peptide GX ENNLRRPNLEAFNRAVKS (SEQ ID NO: 252);

Peptide GY HIKDGDWNEFRRKLTFYLKT (SEQ ID NO: 253);

Peptide GZ SSCLMDRHDFGFPQEEFDGNQ (SEQ ID NO: 254);

Peptide HA QQIFNLFTTKDSSAAWDE (SEQ ID NO: 255);

Peptide HB LMNADSILAVKKYFRRITLY (SEQ ID NO: 256);

Peptide HC MSYNLLGFLQRSSNFQCQKLLWQLN (SEQ ID NO: 257);

Peptide HD DRMNFDIPEEIKQLQQFQK (SEQ ID NO: 258);

Peptide HE KLEKEDFTRGKLMSSLHLKR (SEQ ID NO: 259)

Peptide HF FINRLTGYLRN (SEQ ID NO: 260);

Peptide HG CYCQDPYVKEAENLKKYFNA (SEQ ID NO: 261);

Peptide HH ADNGTLFLGILKNWKEESDR (SEQ ID NO: 262);

Peptide HI NSNKKKRDDFEKLTNYSVTD (SEQ ID NO: 263);

Peptide HJ ELSPAAKTGKR (SEQ ID NO: 264);

Peptide HK SLIIGFAAGALYWKKRQPSL (SEQ ID NO: 265);

Peptide HL RNRVTNNVKDVTKLV (SEQ ID NO: 266);

Peptide HM DKLVNIVDDLVECVKE (SEQ ID NO: 267);

Peptide HN SETSDCWSSTLSPEKDSRV (SEQ ID NO: 268);

Peptide HO DELINIIDGVLRDDDKNND (SEQ ID NO: 269);

Peptide HP GLDKNTVHDQEHIMEHLEGV (SERQ ID NO: 270);

or

Peptide HQ QLHYFKMHDYDGNNLL (SEQ ID NO: 271).

41. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

$A(X)_nN(X)_oN(X)_pB(X)_qC$, (SEQ ID NO:47)

wherein N is Asp (N), A is a Leu (L) or Ile (I), X is independently any amino acid, n is 2-3, o is 0-1, p is 1-7, B is one or more charged amino acids (Asp (D), Lys (K), Glu (E), or Arg (R)), q is 4-7, and C is one or more hydrophobic amino acids (Ala (A), Leu (L), Ile (I) or Val (V)), wherein C is 6-10 amino acids from the second asparagine residue.

42. The method of claim 41, wherein the isolated peptide is:

Peptide U	AEHCSLNENITVPDTKU	(SEQ ID NO: 48);
Peptide HR	CEFLVKEVTKLIDNNKTEKEIL	(SEQ ID NO: 45);
Peptide HS	YVKHQGLNKNINLDSVDGVP	(SEQ ID NO: 46);
Peptide HT	EALAENNLNLPKMAG	(SEQ ID NO: 272),
Peptide HU	LQMILNGINNYKNPKLT	(SEQ ID NO: 273),
Peptide HV	ILMENNLRRPNL	(SEQ ID NO. 274),
Peptide HW	FYLRNNQLVAGTL	(SEQ ID NO: 275),
Peptide HX	YTAQGEPFPNNVELKLCAP	(SEQ ID NO: 276);
Peptide HY	FNKIEINNKLEFESA	(SEQ ID NO: 277), or
Peptide HZ	RPNILGLRNNIYCMAQLL	(SEQ ID NO: 278).

43. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

X_3 -X_4 -X_5 –G-P-X_6-T-W-X_7- X_8 (SEQ ID NO:49)

wherein X_3 can be C, E, A, α-amino-γ-bromobutyric acid, or Hoc, where Hoc is homocysteine;

X_4 can be R, H, Y, L, or W, or X_4 is a bond;

X_5 can be M, F, or I;

X_6 is independently any one of the 20 genetically coded L-amino acids or the stereoisomeric D-amino acids;

X_7 can be D, E, I, L, or V;

and X_8 can be C, K, A, α-amino-γ-bromobutyric acid, or Hoc, where Hoc is homocysteine, provided that either X_3 or X_8 is C or Hoc.

44. The method of claim 43, wherein the isolated peptide is:

Peptide S	GGLYLCRFGPVTWDCGYKGG	(SEQ ID NO:57);
Peptide T	GGTYSCHFGPLTWVCKPQGG	(SEQ ID NO:58);
Peptide U	GGDYHCRMGPLTWVCKPLGG	(SEQ ID NO:59);
Peptide V	VGNYMCHFGPITWVCRPGGG	(SEQ ID NO:60);
Peptide W	GGVYACRMGPITWVCSPLGG	(SEQ ID NO:61);
Peptide X	VGNYMAHMGPITWVCRPGG	(SEQ ID NO:62);
Peptide Y	GGTYSCHFGPLTWVCKPQ	(SEQ ID NO:63);
Peptide Z	GGLYACHMGPMTWVCQPLRG	(SEQ ID NO:64);
Peptide AA	TIAQYICYMGPETWECRPSPKA	(SEQ ID NO:65);
Peptide AB	YSCHFGPLTWVCK	(SEQ ID NO:66);
Peptide AC	YCHFGPLTWVC	(SEQ ID NO:67);
Peptide AD	SCHFGPLTWVCK	(SEQ ID NO:68);
Peptide AE	GGTASCHFGPLTWVCKPQGG	(SEQ ID NO:69);
Peptide AF	GGTYSCHFAPLTWVCKPQGG	(SEQ ID NO:70);
Peptide AG	GGTYSCFGPLTWVCKPQGG	(SEQ ID NO:71);
Peptide AH	TYSCHFGPLTWVCKPQGG	(SEQ ID NO:72);
Peptide AI	TYSCHFGPLTWVCKPQ	(SEQ ID NO:73);
Peptide AJ	YSCHFGPLTWVCKP	(SEQ ID NO:74);
Peptide AK	YSCHFGPLTWVC	(SEQ ID NO:75);
Peptide AL	YSCHFGALTWVCK	(SEQ ID NO:76);
Peptide AM	GGCRIGPITWVCGG	(SEQ ID NO:77);
Peptide AN	HFGPLTWV	(SEQ ID NO:78);
Peptide AO	GGTTSCHFGPLTWVCKPQGG	(SEQ ID NO:79);
Peptide AP	GGTFSCHFGPLTWVCKPQGG	(SEQ ID NO:80);
Peptide AQ	GGTYSCHFGALTWVCKPQGG	(SEQ ID NO:81);
Peptide AR	GGTYSCHFGPATWVCKPQGG	(SEQ ID NO:82);
Peptide AS	GGTYSCHFGPLAWVCKPQGG	(SEQ ID NO:83);
Peptide AT	GGTYSCHFGPLTAVCKPQGG	(SEQ ID NO:84);
Peptide AU	GGTYSCHFGPLTFVCKPQGG	(SEQ ID NO:85);

Peptide AV GGTYSCHFGPLTWVCKAQGG (SEQ ID NO:86);

Peptide AW GGTXSCHFGPLTWVCKPQGG (SEQ ID NO:87);

Peptide AX GGTXSCHFGPLTWVCKPQGG (SEQ ID NO:88);

Peptide AY GGTXSCHFGPLTWVCKPQGG; (X = p-NH_2-Phe)(SEQ ID NO:89);

Peptide AZ GGTXSCHFGPLTWVCKPQGG; (X = p-F-Phe) (SEQ ID NO:90);

Peptide BA GGTXSCHFGPLTWVCKPQGG; (X = p-I-Phe) (SEQ ID NO:91);

Peptide BB GGTXSCHFGPLTWVCKPQGG; (X = 3,5-dibromo-Tyr) (SEQ ID NO:92);

Peptide BC Ac-GGTYSCHFGPLTWVCKPQGG (SEQ ID NO:93);

Peptide BD GGLYACHMGPMTWVCQPLGG (SEQ ID NO:94);

Peptide BE LGRKYSCHFGPLTWVCQPAKKD (SEQ ID NO:95); or

Peptide BF GGTYSEHFGPLTWVKKPQGG (SEQ ID NO:96).

45. A method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof comprising administration to said subject an effective amount of an isolated peptide comprising:

XAEHYS (SEQ ID NO: 101),

wherein X is a first amino acid residue containing a sulfhydral group;

and Y is a second amino acid residue containing a sulfhydral group, and wherein the sulfhydral group of the first amino acid residue is at an appropriate distance from the sulfhydral group of the second amino acid residue to form the disulfide bond with the sulfhydral group of the second amino acid residue within the peptide sequence.

46. The method of claim 45, wherein the isolated peptide is:

Peptide BK TTGCAEHCSLNENITVPDTK (SEQ ID NO: 102);

Peptide BL CAEHCSLNENITVPDTKV (SEQ ID NO; 103);

Peptide BM CAEHCS (SEQ ID NO: 104);

Peptide BN GCAEHCSL (SEQ ID NO: 105);

Peptide BO GCAEHCSLNENITVPDTKV (SEQ ID NO: 106);

Peptide BP CAEHCSLNENiTVP (SEQ ID NO: 107);

Peptide BQ TTGCAEHCSLNENITVPDTKV (SEQ ID NO: 108);

Peptide BR TTGCAEHCSLNENITVP (SEQ ID NO: 109); or

Peptide BS CAEHCSLNKNINLDSVDGVP (SEQ ID NO: 110).

47. The methods of claim 28 and 30-46, wherein the disease associated with tissue damage is cancer.

48. The method of claim 47, wherein the cancer is infiltrating breast cancer, pre-invasive breast cancer, inflammatory breast cancer, Paget's disease, metastatic breast cancer, recurrent breast cancer, appendix cancer, bile duct cancer, extrahepatic bile duct cancer, colon cancer, esophageal cancer, gallbladder cancer, gastric cancer, intestinal cancer, liver cancer, pancreatic cancer, rectal cancer, stomach cancer, adrenal cancer, bladder cancer, kidney cancer, penile cancer, prostate cancer, testicular cancer, urinary cancer, cervical cancer, endrometrial cancer, fallopian tube cancer, ovarian cancer, uterine cancer, vaginal cancer, vulvar cancer, eye cancer, head and neck cancer, jaw cancer, laryngeal cancer, pharyngeal cancer, oral cancer, nasal cavity cancer, salivary gland cancer, sinus cancer, throat cancer, thyroid cancer, tongue cancer, tonsil cancer, Hodgkin's disease, leukemia, acute lymphocytic leukemia, acute granulocytic leukemia, acute myelogenous leukemia, chronic lymphatic leukemia, chronic myelogenous leukemia, multiple myeloma, lymphoma, b-cell lymphoma, lymph node cancer, bone cancer, osteosarcoma, melanoma, skin cancer, basal cell cancer, squamous cell cancer, sarcoma, Ewing's sarcoma, Kaposi's sarcoma, brain cancer, astrocytoma, glioblastoma, glioma, pituitary gland cancer, spinal cord cancer, lung cancer, adenocarcinoma, oat cell cancer, non-small cell lung cancer, small cell lung cancer, squamous cell cancer, or mesothelioma.

49. The methods of claim 28 and 30-46, wherein the disease associated with tissue damage is inflammation.

50. The method of claim 49, wherein the inflammation is appendicitis, blepharitis, bronchitis, bursitis, cervicitis, cholangitis, cholecystitis, chorioamnionitis, conjunctivitis, cystitis, dacryoadenitis, dermatitis, endocarditis, endometritis, epicondylitis, epididymitis, fibrositis, gastritis, gingivitis, glossitis, hidradenitis suppurativa, iritis, laryngitis, mastitis, myocarditis, myositis, nephritis, omphalitis, oophoritis, orchitis, osteitis, otitis, parotitis, pericarditis, peritonitis, pharyngitis, pleuritis, phlebitis, pneumonitis (pneumonia), prostatitis, pyelonephritis, rhinitis, salpingitis, sinusitis, stomatitis, synovitis, tonsillitis, uveitis, urethritis, vaginitis, vulvitis, asthma, systemic lupus erythematosus, myasthenia gravis, tendonitis, angiitis, chronic

bronchitis, pancreatitis, osteomyelitis, rheumatoid arthritis, psoriatic arthritis, glumeronephritis, optic neuritis, temporal arteritis, encephalitis, meningitis, traverse myelitis, dermatomyositis, polymyositis, necrotizing fasciitis, hepatitis, necrotizing entercolitis, pelvic inflammatory disease, inflammatory bowel disease, ulcerative colitis, Chron's disease, ileitis, enteritis, proctitis, vasculitis, vascular stenosis, restenosis, hypotension, Type-1 diabetes, Kawasaki disease, Decum's disease, chronic obstructive pulmonary disease, psoriasis, artherosclerosis, scleroderma, Sjogren's syndrome, mixed connective tissue disease, rosacea, gastric ulcers, duodenal ulcers, Alzheimer's disease, adult onset Still's disease, acute retinal pigment epitheliitis, Tietze's syndrome, Bechçet's disease, white dot syndrome, acute posterior multifocal placoid pigment epitheliopathy, serpiginous choroiditis, birdshot chorioretinopathy, multifocal choroiditis with panuveitis, diffuse subretinal fibrosis syndrome, punctuate inner choroidopathy, multiple evanescent white dot syndrome, diffuse unilateral subacute neuroretinitis, granuloma annulare, irritable bowel syndrome, gastroenteritis, Grave's disease, multiple sclerosis, Dupuytren's contracture, graft rejection diseases, allograft rejection, graft-v-host disease, skin graft rejection, solid organ transplant rejection, bone marrow transplant rejection, inflammatory dermatoses, viral cutaneous pathologies such as those derived from human papilloma virus, HIV, or RLV infection, bacterial, fungal and or other parasital cutaneous pathologies, cutaneous lupus erythematosus, Hyper IgG4 disease, allergies, allergic diseases, inflammation resulting from blunt trauma, inflammation resulting from contusions, inflammation resulting allergies, rheumatic disease, childhood arthritis, rheumatoid arthritis, Churg-Strauss syndrome, fibromyalgia, giant cell (temporal) arteritis, gout, Henoch-Schoenlin purpura, hypersensitivity vasculitis, ankylosing spondylitis, capsulitis, rheumatic fever, rheumatic heart disease, systemic lupus erythematosus, polymyalgia rheumatica, osteoarthritis, polyarteritis nodosa, Reiter's syndrome, sports related injuries, runner's knee, tennis elbow, frozen shoulder, Achilles tendonitis, plantar fasciitis, bursitis, Osgood-Schlatter disease, repetitive stress injuries, cumulative trauma diseases, focal dystonia, carpal tunnel syndrome, intersection syndrome, reflex sympathetic dystrophy syndrome, stenosing tenosynovitis, De Quervain's syndrome, trigger finger/trigger thumb, thoracic outlet syndrome, tendonitis, tenosynovitis, radial tunnel syndrome, Raynaud's disease, ganglion, gamer's thumb, Wii-itis, inflammation resulting from infections.

51. The methods of claim 28 and 30-46, wherein the disease associated with tissue damage results from exposure to a toxic agent.

52. The method of claim 51, wherein the toxic agent is a biological agent, chemical agent or radiation agent.

53. The methods of claims 27 and 30-46, wherein the subject is a mammal.

54. The method of claim 53, wherein the mammal is a human.

55. A method for protecting, maintaining, or enhancing the viability of a responsive cell, tissue, or organ isolated from a mammal comprising exposing the cell, tissue, or organ to a pharmaceutical composition of claim 24, 25, or 26.

56. An isolated nucleic acid comprising a nucleotide sequence encoding the isolated peptide of any one of claims 1-21.

57. An expression vector comprising the nucleic acid of claim 56.

58. A host cell comprising the expression vector of claim 57.

59. The isolated peptides of claims 1-21, wherein said amphipathic peptide helix comprises the amino acid sequence ALSILVLLQAGS (SEQ ID NO.:283); VALLPCPPCRA (SEQ ID NO.:284); NAIIKNAYKKG (SEQ ID NO.:285); GSWQRSLQDTE (SEQ ID NO.:286); GGSAARPAPP (SEQ ID NO.:287); NALAENDTPYY (SEQ ID NO.:288); GALAEAYPSKP (SEQ ID NO.:289); GCSSQHWSYGL (SEQ ID NO.:290); VMIVMLAICFL (SEQ ID NO.:291); LRRYINMLTRP (SEQ ID NO.:292); or LALSILVLYQA (SEQ ID NO.:293).

WHAT IS CLAIMED IS:

1. An isolated peptide comprising the amino acid sequence UEQLERALNSS (SEQ ID NO. 282), wherein U is pyroglutamate.

2. An isolated peptide consisting of the amino acid sequence UEQLERALNSS (SEQ ID NO. 282), wherein U is pyroglutamate.

3. The isolated peptide of claim 1, wherein said peptide is modified with an addition of polyethylene glycol.

4. The isolated peptide of claim 1, wherein said peptide does not increase hemoglobin in a recipient.

5. The isolated peptide of any one of claims 1-4 that has tissue protective activity in a responsive cell, tissue, or organ, wherein the tissue protective activity is protecting, maintaining, enhancing or restoring the function and/or viability of said cell, tissue, or organ.

6. The isolated peptide of any one of claims 1-4, wherein said peptide is capable of traversing the endothelial cell barrier.

7. The isolated peptide of any one of claims 1-6, wherein said peptide is produced by chemical synthesis and has less than about 5 % (by dry weight) of chemical precursors or compounds other than the peptide.

8. A pharmaceutical composition comprising a therapeutically effective amount of the isolated peptide of any one of claims 1-7 and a pharmaceutically acceptable carrier.

9. The pharmaceutical composition of claim 8 for use in a method for treatment of a subject suffering from a disease associated with tissue damage.

10. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is caused by cancer, ischemic, hypoxic, traumatic, toxic, or inflammatory injuries.

11. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is a cardiovascular disease, cardiopulmonary disease, respiratory disease, kidney disease, disease of the urinary system, disease of the reproductive system, bone

disease, skin disease, gastrointestinal disease, endocrine abnormality, metabolic abnormality, cognitive dysfunction, or a disease or disorder of the central or peripheral nervous system.

12. The pharmaceutical composition of claim 8 for use in a method of preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof.

13. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is a disease or disorder of the central nervous system.

14. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is a disease or disorder of the peripheral nervous system.

15. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is cognitive dysfunction.

16. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is caused by inflammatory injuries.

17. The pharmaceutical composition for use of claim 16, wherein said inflammatory injuries are from sarcoidosis.

18. The pharmaceutical composition for use of claim 16, wherein said inflammatory injuries are from rheumatoid arthritis.

19. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is caused by ischemic injuries.

20. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is caused by hypoxic injuries.

21. The pharmaceutical composition for use of claim 9, wherein the disease associated with tissue damage is diabetes mellitus.

22. Use of the isolated peptide of any one of claims 1-7 in the manufacture of a pharmaceutical composition for use in treating a subject suffering from a disease associated with tissue damage.

23. The use of claim 22, wherein the disease associated with tissue damage is caused by cancer, ischemic, hypoxic, traumatic, toxic, or inflammatory injuries.

24. The use of claim 22, wherein the disease associated with tissue damage is a cardiovascular disease, cardiopulmonary disease, respiratory disease, kidney disease, disease of the urinary system, disease of the reproductive system, bone disease, skin disease, gastrointestinal disease, endocrine abnormality, metabolic abnormality, cognitive dysfunction, or a disease or disorder of the central or peripheral nervous system.

25. Use of the isolated peptide of any one of claims 1-7 in the manufacture of a pharmaceutical composition for use in a method for preventing, treating, ameliorating, or managing cancer, a neoplastic disorder, inflammation, or toxic agent exposure in a subject in need thereof.

26. The use of claim 22, wherein the disease associated with tissue damage is a disease or disorder of the central nervous system.

27. The use of claim 22, wherein the disease associated with tissue damage is a disease or disorder of the peripheral nervous system.

28. The use of claim 22, wherein the disease associated with tissue damage is cognitive dysfunction.

29. The use of claim 22, wherein the disease associated with tissue damage is caused by inflammatory injuries.

30. The use of claim 29, wherein said inflammatory injuries are from sarcoidosis.

31. The use of claim 29, wherein said inflammatory injuries are from rheumatoid arthritis.

32. The use of claim 22, wherein the disease associated with tissue damage is caused by ischemic injuries.

33. The use of claim 22, wherein the disease associated with tissue damage is caused by hypoxic injuries.

34. The use of claim 22, wherein the disease associated with tissue damage is diabetes mellitus.