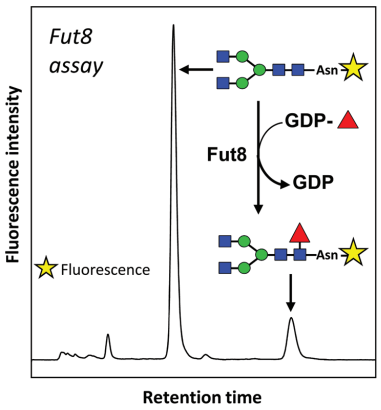
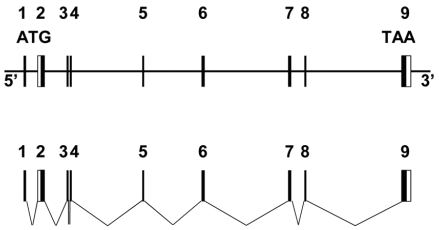
ISSN 0021-924X (PRINT)
ISSN 1756-2651 (ONLINE)

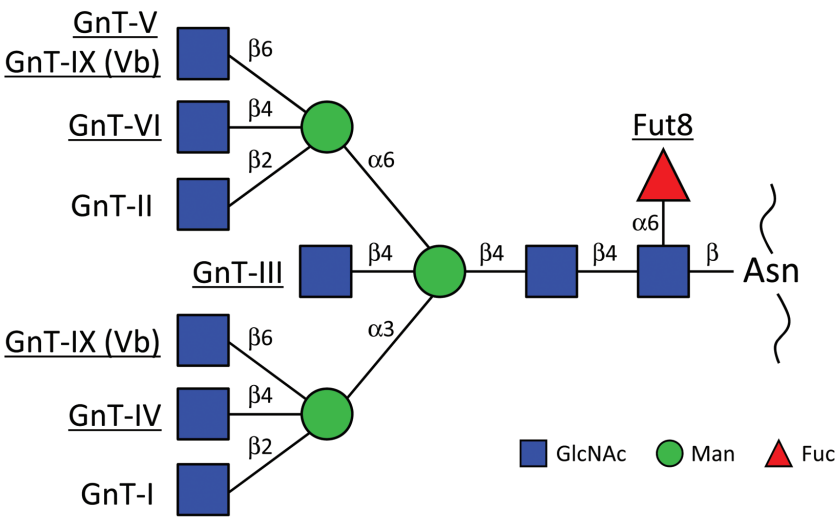
THE JOURNAL OF BIOCHEMISTRY

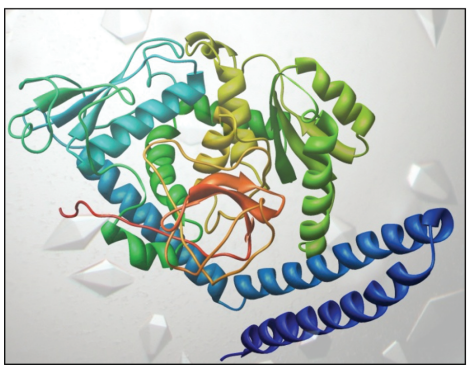
Published Monthly by THE JAPANESE BIOCHEMICAL SOCIETY

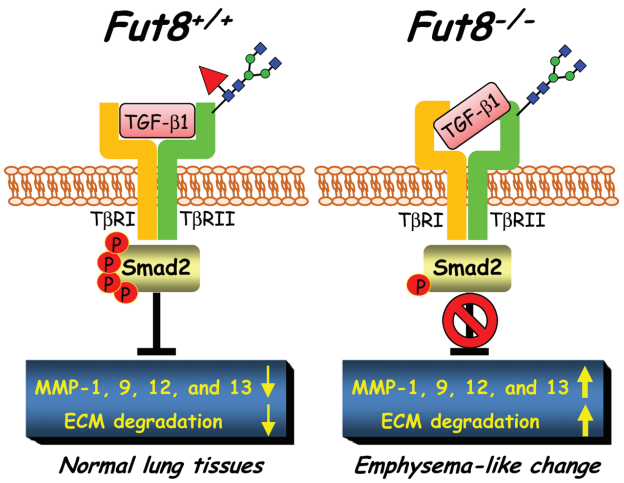
VOL. 152 NO. 1 JULY 2012
JOBIAO 152 (1) 1–119











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The submission of a manuscript implies that the work has not been published previously, that it is not under consideration for publication elsewhere, and that if it is accepted for publication, the author(s) will grant an exclusive license to publish to the Japanese Biochemical Society.

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	Enzymology
	Enzyme Inhibitors
	Biochemistry of Proteolysis
	Metabolism and Bioenergetics
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"Instructions to Authors" are printed in the January and July issues of this JOURNAL every year. Please conform to these instructions when submitting manuscripts. Reprint of "Instructions to Authors" is available.

Author Index

COVER: Discovery in Japan

Branched *N*-glycans play key roles in patho-physiology

Taniguchi's group purified numerous glycosyltransferases (GnT-III, -IV, -V, -VI, and Fut8; only GnT-IX (Vb) was cloned based on homology with GnT-V) that are involved in the biosynthesis of *N*-linked sugar chain sequences on glycoproteins by methods developed in their laboratory and characterized their biochemical properties such as substrate specificity and enzyme properties. They then succeeded in the cloning of a number of glycosyltransferase genes (glycogenes) that encode the above glycosyltransferases and discovered that the sugar chains have a variety of functions (*1*). Studies related to α1,6-fucosyltransferase (Fut8) have recently been completed. Fut8 catalyzes the transfer of a fucose residue from GDP-β-L-fucose to the reducing terminal GlcNAc in the *N*-glycan core via an α1,6-linkage to form a unique structure called a ''core fucose''. They first developed a fluorescent assay method for measuring Fut8 activity and successfully purified the enzyme from porcine brain tissues and from human gastric cancer cells. Based on the partial amino acid sequences of the purified enzyme, they cloned the Fut8 cDNA and revealed the genomic structure. They found most *Fut8* KO mice die within three days and the survivors show marked growth retardation and develop emphysematous changes in the lungs. In those mice, due to the lack of a core fucose, the TGF-β1 receptor results in marked dysregulation in receptor function. This eventually causes a failure to control extracellular matrix homeostasis and activates matrix metalloproteinases (MMPs). Additionally, to understand the molecular basis for Fut8 action, they solved the overall structure of human Fut8 and found that the enzyme is comprised of three domains and contains an SH3 domain at the C-terminus, which is unique in glycosyltransferases (*2*). When exposed to cigarette smoke, heterozygous KO mice ($Fut8^{+/-}$) develop emphysema-like symptoms (*3*) and Fut8 activity is lower in patients with emphysema.

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3. Gao, C., Maeno, T., Ota, F., Ueno, M., Korekane, H., Takamatsu, S., Shirato, K., Matsumoto, A., Kobayashi, S., Yoshida, K., Kitazume, S., Ohtsubo, K., Betsuyaku, T., Taniguchi, N. (2012) Sensitivity of heterozygous α1,6-fucosyltransferase knock out mice to cigarette smoke-induced emphysema: implication of aberrant TGF-β signaling and MMP gene expression. *J. Biol. Chem.* **287**, 16699–16708

The cover figure regarding the genomic structure was published in *Glycobiology*, Vol. 10, No. 6, 2000, pp. 637–643, and is reproduced from Yamaguchi *et al*., with the permission of Oxford University Press.

INSTRUCTIONS TO AUTHORS

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Molecular Biology
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Molecular Biology: Molecular Biology General; Genes and Other Genetic Materials; Replication and Recombination; Gene Expression; Protein Synthesis; DNA-Protein Interaction; RNA Processing; Genetic Engineering; Genetic Diseases; Molecular Genetics; Molecular Evolution; Bioinformatics

Cell: Cell General; Biomembranes, Organelles, and Protein Sorting; Muscles; Cytoskeletons, Cell Motility, and Cell Shape; Extracellular Matrices and Cell Adhesion Molecules; Cell Cycle; Receptors and Signal Transduction; Stress Proteins and Molecular Chaperones; Cell Death; Differentiation, Development, and Aging; Neurobiology; Tumor and Immunology

Biotechnology: Biotechnology General; Biomimetic Chemistry; Biomaterials; Bioactive Substances; Synthetic Peptides and Oligonucleotides; Gene and Protein Engineering; RNA Technology; Glycotechnology; Immunological Engineering; Cell and Tissue Engineering; Transgenic Technology; Gene Delivery Systems; Drug Delivery Systems; Biosensor and Bioelectronics; New Devices in Biotechnology; Environmental Technology

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Manuscript will be sent to at least two referees for evaluation. The JOURNAL always attempts to minimize the potential for conflict of interest in the review of manuscripts. Therefore, authors may request that a specific individual with a possible conflict of interest not be involved in reviewing the manuscript. Authors may suggest the names and addresses of a few potential reviewers. The Editors and Associate Editors will be guided but not necessarily bound by these suggestions.

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IV. ORGANIZATION OF MANUSCRIPT

A desirable plan for the organization of a **Regular Paper** is as follows: **(a) SUMMARY, (b) INTRODUCTION** with no heading, **(c) EXPERIMENTAL PROCEDURES** or **MATERIALS AND METHODS**, **(d) RESULTS**, **(e) DISCUSSION**, **(f) REFERENCES**. In some cases, presentation will be clearer and more effective if the author combines some of these sections. For a **Rapid Communication**, a brief summary is requested, but headings and subheadings should be omitted.

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Provide a title page(s), containing the following items.

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15. Sambrook, J., Fritsch, E.F., and Maniatis, T. (1989) *Molecular Cloning. A Laboratory Manual* pp. 1339–1341, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY

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29. Tanahashi, H. and Ito, T. (1994) Molecular characterization of a novel factor recognizing the interleukin-6 responsive element. *J. Biochem*. (in press)

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New nucleotide data must be submitted and deposited in the DDBJ/EMBL/GenBank databases and an accession number obtained before the paper can be accepted for publication. Submission to any one of the three collaborating databanks is sufficient to ensure data entry in all. The accession number should be included in the manuscript *e.g*., as a footnote on the title page: "Note: Nucleotide sequence data reported are available in the DDBJ/EMBL/GenBank data-bases under the accession number(s)...". If requested, the database will withhold release of data until publication. The most convenient method for submitting sequence data is by World Wide Web:

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IX. CHEMICAL AND MATHEMATICAL FORMULAE

1. Refer in the text to simple chemical compounds by their formulae when these can be printed in simple horizontal lines of type. Do not use structural formulae in the running text.
2. Ionic charge should be shown as a superscript following the chemical symbol, *e.g.* Fe^{3+}, SO_4^{2-}.
3. Prepare large structural formulae and long mathematical equations in a form suitable for direct photographic reproduction and include them as a Diagram at the end of the paper.
4. **Isotopically Labeled Compounds**—The symbol for an isotope is shown in square brackets directly before the name (word), as in [^{14}C]urea, [α-^{14}C]leucine, DL-[methyl^{14}C]methionine. When more than one position in a substance is labeled with the same isotope and the positions are not indicated, the number of labeled atoms should be indicated as a right-hand subscript; as in [$^{14}C_2$]glycolic acid. The symbol *U* indicates uniform, *e.g.* [*U*-^{14}C]glucose (where the ^{14}C is uniformly distributed among all six positions). The isotopic prefix precedes that part of the name to which it refers, as in sodium [^{14}C]formate, thiamine [β-^{32}P]diphosphate. Terms such as ^{131}I-labeled albumin should not be contracted to [^{131}I]albumin. When isotopes of more than one element are introduced, their symbols should be arranged in alphabetical order: *e.g.* L-[3-^{14}C, 2,3-^{2}H, ^{15}N]serine. The symbols ^{2}H and ^{3}H or D and T may be used for deuterium and tritium, respectively.

   For simple molecules, the labeling is indicated by writing the chemical formulae with the prefix superscripts attached to the correct atomic symbols in the formulae: *e.g.* $^{14}CO_2$, $H_2{}^{18}O$, $^{2}H_2O$. Square brackets should not be used for them, or when the isotopic symbol is attached to a word that is not a specific chemical name, abbreviation or symbol: *e.g.* ^{131}I-labeled, ^{14}C-sugar, ^{14}C-steroids, $^{32}PO_4^{3-}$, but [^{32}P]-phosphate.
5. **Spectrophotometric Data**—Beer's law may be stated as

$$A = -\log T = \varepsilon lc$$

Where A is the absorbance; T, the transmittance ($-I/I_0$); ε, the molar absorption coefficient; c, the concentration of the absorbing substances in moles per liter; and l, the length of the optical path in centimeters. Under these conditions ε has the dimensions liter $\cdot$ mol^{-1} $\cdot$ cm^{-1} or more briefly M^{-1} $\cdot$ cm^{-1} (not cm^{-} $\cdot$ mol^{-1}). Do not use "O.D." and "E."

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7. **Abbreviations of Units of Measurement and Physical and Chemical Quantities**—These abbreviations listed in Table I may be used without definition.

TABLE I

(1) Prefixes to the names of units					
tera	10^{12}	T	milli	10^{-3}	m
giga	10^{9}	G	micro	10^{-6}	μ
mega	10^{6}	M	nano	10^{-9}	n
kilo	0^{3}	k	pico	10^{-12}	p
Deci	10^{-1}	deci (not d)	femto	10^{-15}	f
centi	10^{-2}	c[1)]	atto	10^{-18}	a
(2) Units of Concentration[2)]					
molar (moles/liter)		M			
millimolar (millimoles/liter)		mM (not 10^{-3} M)			
micromolar (micromoles/liter)		μM (or 10^{-6} M)			
nanomolar (nanomoles/liter)		nM (or $\times 10^{-9}$ M)			
picomolar (picomoles/liter)		pM (or $\times 10^{-12}$ M)			
(3) Units of Length					
meter		m			
centimeter		cm			
millimeter		mm			
micrometer (not micron)		μm (not μ)			
nanometer		nm (not μ)			
Ångstrom (0.1 nm)		Å			

(4) Units of Area and Volume			
square centimeter			cm^2
cubic centimeter			cm^3
liter			l (in tables only)
milliliter			ml
microliter			µl (not λ)
(5) Units of Mass			
gram			g (kg, mg, µg [not γ], ng, pg)
dalton[3)]			Da
(6) Units of Time			
hour	h	year	yr
minute	min	month	mo
second	s	week	wk
		day	d
(7) Units of Radioactivity			
becquerel			Bq (= 1 dps or 60 dpm)
counts per minute			cpm
curie(s)			Ci ($= 3.7 \times 10^{10}$ Bq)
disintegrations per minute			dpm
(8) Other Units			
mole			mol (mmol, µmol, nmol, pmol)
degree Celsius			°C
degree absolute (kelvin)			K
joule			J
kilojoule			kJ
calorie			cal
kilocalorie			kcal
parts per billion			ppb
parts per million			ppm
cycles per second (hertz)			Hz (not cps)
equivalent			eq
ampere			A (mA)
ohm			Ω
volt			V
gauss			G
pascal			Pa
revolutions per minute			rpm
Svedberg unit of sedimentation coefficient (10^{-13} s)			S
(9) Physical and Chemical Quantities			
absorbance			A
equilibrium constant			K
rate constant			k
maximum velocity			V_{max}
Michaelis constant			K_m
equilibrium dissociation constant			K_d
isoelectric point			pI
molecular weight[3)]			M_r
retardation factor			R_f
acceleration of gravity			g
specific rotation			$[\alpha]_\lambda^t$
partial specific volume			$\bar{\nu}$
diffusion constant			D
sedimentation coefficient			s
density			ρ
sedimentation coefficient in water at 20°C, extraporated to zero concentration			$s^0_{20,w}$
Gibbs energy change			ΔG
entropy change			ΔS
enthalpy change			ΔH
melting temperature			T_m
(10) Other Terms			
logarithm			log
logarithm (natural)			ln
standard deviation of a series			SD
standard error of mean of series			SE

[1)] To be avoided where possible (except for cm).

[2)] Terms such as milligram percent (mg%) should not be used. Weight concentrations should be given as g/ml, g/100 ml, *etc.*

[3)] Molecular weight is dimensionless. Only molecular mass is expressed by daltons.

8. **Accepted Abbreviations and Symbols**—Authors may use, without definition, the abbreviations given in Table II and the symbols and abbreviations for amino acid or nucleotide residues in polymers or sequences. Define other abbreviations in a single footnote on the title page.

TABLE II

(1) General	
Adenosine 3′:5′-cyclic monophosphate	cAMP
Adenosine 5′-mono-, di, and triphosphates[1)]	AMP, ADP, and ATP
Adenosine triphosphatase	ATPase
Base pair(s)	bp
Bovine serum albumin	BSA
O-(Carboxymethyl)	CM-
Circular dichroism	CD
Coenzyme A and its acyl derivatives	CoA (or CoASH) and acyl-CoA
Complementary DNA	cDNA
Cyclic AMP	cAMP
Cyclic GMP	cGMP
Cytidine diphosphate choline, *etc.*	CDP-choline, *etc.*
Cytidine 5′-mono-, di-, and triphosphates	CMP, CDP, and CTP
Deoxyribonuclease	DNase
Deoxyribonucleic acid	DNA
O-(Diethylaminoethyl)	DEAE-
Dithiothreitol	DTT
Electron paramagnetic resonance	EPR
Electron spin resonance	ESR
Ethylenediaminetetraacetic acid	EDTA
[Ethylenebis(oxyethlenenitrilo)]-tetraacetic acid	EGTA
Flavin-adenine dinucleotide and its fully reduced form	FAD and $FADH_2$
Flavin mononucleotide and its fully reduced form	FMN and $FMNH_2$
Fourier transform	FT
Gas chromatography-mass spectrometry	GC-MS
Gas liquid chromatography	GLC
Glutathione and its oxidized form	GSH and GSSG
Guanosine 3′:5′-cyclic monophosphate	cGMP
Guanosine 5′-mono-, di-, and triphosphates	GMP, GDP, and GTP
Guanosine triphosphatase	GTPase
Hemoglobin	Hb
Heterogenous nuclear RNA	hnRNA
High performance (pressure) liquid chromatography	HPLC
4-(2-Hydroxyethyl)-1-piperazineethane-sulfonic acid	HEPES
Immunoglobulin	Ig (IgG, IgM, *etc.*)
Infrared	IR
Inorganic orthophosphate	P_i
Inorganic pyrophosphate	PP_i
Inosine 5′-mono-, di-, and triphosphates	IMP, IDP, and ITP
Kilobases	kb
Kilobase pairs	kbp
Lethal dose, 50%	LD_{50}
Messenger RNA	mRNA
Nicotinamide adenine dinucleotide and its reduced form	NAD^+ and NADH[2)]
Nicotinamide adenine dinucleotide phosphate and its reduced form	$NADP^+$ and NADPH[2)]
Nuclear magnetic resonance	NMR
Nuclear RNA	nRNA
Optical rotatory dispersion	ORD
Phosphoric acid residue	P- or -P
Pseudouridine and pseudouridine mono-nucleotide	ψ and ψMP
Polyacrylamide gel electrophoresis	PAGE
Poly(adenylic acid), polyadenylate[3)]	Poly(A)[3)]
Polymerase chain reaction	PCR
Restriction fragment length polymorphism	RFLP
Ribonuclease	RNase
Ribonucleic acid	RNA

Ribosomal RNA	rRNA
Ribosylthymine 5′-mono-, di-, and triphosphates	TMP, TDP, and TTP
Sodium dodecyl sulfate	SDS
Thin layer chromatography	TLC
Thymidine (2′-deoxyribosylthymine) 5′-mono-, di-, and triphosphates	dTMP, dTDP, and dTTP[4)]
Transfer RNA	tRNA
Tris(hydroxymethyl)aminomethane	Tris
Ultraviolet	UV
Uridine diphosphate glucose, *etc.*	UDP-glucose, *etc.*
Uridine 5′-mono-, di-, and triphosphates	UMP, UDP, and UTP
(2) Amino acids	
Alanine	Ala (A)
Arginine	Arg (R)
Asparagine	Asn (N)
Aspartic acid	Asp (D)
Aspartic acid or asparagine	Asx (B)
Cysteine	Cys (C)
Glutamic acid	Glu (E)
Glutamine	Gln (Q)
Glutamic acid or glutamine	Glx (Z)
Glycine	Gly (G)
Histidine	His (H)
Isoleucine	Ile (I)
Leucine	Leu (L)
Lysine	Lys (K)
Methionine	Met (M)
Phenylalanine	Phe (F)
Proline	Pro (P)
Serine	Ser (S)
Threonine	Thr (T)
Tryptophan	Trp (W)
Tyrosine	Tyr (Y)
Valine	Val (V)
(3) Nucleic acids	
Adenosine	A
Bromouridine	BrUrd or B
Cytidine	C
Dihydrouridine	D or hU
Guanosine	G
Inosine	I
6-Mercaptopurine ribonucleoside (6-thioinosine)	M or sI
'a nucleoside'	Nuc or N
Pseudouridine	ψ or Q[a]
'a purine nucleoside'	R
'a pyrimidine nucleoside'	Y
Thiouridine	S or sU
Thymidine (2′-deoxyribosylthymine)	dT
Uridine	U
Xanthosine	X
Phosphoric residue	-*P* or p

[1)] The various isomers of adenosine monophosphate may be written 2′-AMP, 3′-AMP, or 5′-AMP (in case of possible ambiguity). A similar procedure may be applied to other nucleoside or deoxyribonucleoside monophosphates.

[2)] $NAD(P)^+$ and NAD(P)H indicate either NAD^+ or $NADP^+$ and either NADH or NADPH, respectively.

[3)] Similarly abbreviate oligo- and polynucleotides composed of repeating sequences or of unknown sequence of given purine or pyrimidine bases, *e.g.* oligothymidylate, oligo(dT); alternating copolymer of A and U, poly(A-U); random copolymer of A and U, poly(A,U).

[4)] The d prefix may be used to represent the corresponding deoxyribonucleoside phosphates, *e.g.* dADP.

9. **Names of Animals, Plants, and Microorganisms**—The scientific names are Latin binomials and should be given in full in the title and summary and on first mention in the text (*e.g. Escherichia coli*). Subsequently, the generic name may be contracted (usually to the first letter), *e.g.*, *E. coli*. The strain of laboratory animals and if possible the source should be stated.
10. The cytochromes should be designated by a small italicized letter, *e.g.* cytochrome *a*, b_2, c_1, *etc.*

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6. When you are satisfied with the uploaded manuscript proof, click on 'Save and Continue' which will take you to the 'Review & Submit' screen. The system will check that you have completed all the mandatory fields and that you have viewed your manuscript proof. It will also present you with a summary of all the information you have provided and give you a final chance to edit it. When you have finished reviewing this information press 'Submit'.
7. After the manuscript has been submitted you will see a confirmation screen and receive an email confirmation stating that your manuscript has been successfully submitted. This will also give the assigned manuscript number, which is used in all correspondence. **If you do not receive this, your manuscript will not have been successfully submitted to the journal and the paper cannot progress to peer review**. If this is the case your manuscript will still be sitting in the 'Unsubmitted Manuscripts' section of your 'Author Center' awaiting your attention.
8. If you return to your 'Author Center' you will notice that your newly submitted manuscript can be found in the 'Submitted Manuscripts' area. Among the information listed there, the 'Status' section provides information on the status of your manuscript as it moves through the review process.

SUBMITTING A REVISED MANUSCRIPT

1. Please supply your revised paper through the online submission website using your User ID and Password to log-on—remember that these are both case-sensitive. Log on to the online submission website and, in the 'Author Center', click on 'Manuscripts with Decisions' under 'My Manuscripts'. You will then see a list of all manuscripts you have submitted where the editors have been able to make a decision.
2. Find the manuscript you wish to revise and click on the link 'create a revision' in the 'Actions' column. This will initiate a revised-submission process that prompts you to respond to the points made by the Editors and/or reviewers. Continue to follow the 7-step submission process, providing information when prompted.

Please note: **All the files from your previous submission will have been retained by the system. So, when you reach the 'File Upload' screen (Step #6), you will need to delete any files that are no longer needed or need replacing with revised versions.**

Getting help

If you experience any problems during the online submission process, please consult the Author's User Guide which provides more detailed submission instructions, and 'movie tutorials' explaining how to submit your paper. Alternatively, please contact the Journal's Editorial Office who will be pleased to assist you.