



final report

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Patent search Extraction and uses of collagen

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Your Ref:
Our Ref: 20003AUS00 daa/ja

24 June 2005

Dear Stewart

Patent subject matter search – “Extraction and uses of collagen”

We refer to our email of 1 June 2005 and subsequent telephone conversations regarding the above referenced search.

We now enclose the search results for your initial review. A copy of the search outline provided to our searcher is **enclosed** as Appendix A for your ease of reference. As agreed, the search was restricted to consideration of patent documents only.

The following patent datafiles were searched by our searcher. The scope of the subject matter covered by the data files is set out in **enclosed** Appendix B.

- Derwent World Patents Index
- WIPO/PCT Patents Fulltext
- US Patents Fulltext
- JAIPO
- European Patents Fulltext

The search identified 359 International (PCT) patent applications, United States, and Australian patent applications/granted patents, the details for which are set out in Tables 1 – 3. The search also located a significant number of patent documents from other jurisdictions. You will note that many of the abstracts do not identify the particular type of collagen involved but have been included for completeness. In view of the number of documents located, our searcher has only provided us with copies of the abstracts for the documents at this time. Our searcher has, however, advised that they will provide full copies of the

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documents if we let them know which of the documents located are of potential interest to you.

To assist you, we have undertaken an initial review of the various abstracts and have classified the abstracts into 6 broad collagen technology categories, namely:

- (i) Wound dressings and materials / tissue repair / bone repair / sealants and prostheses
- (ii) Pharmaceutical preparations / formulations / cell culture related
- (iii) Cosmetic preparations / formulations / uses
- (iv) Foodstuffs / casings
- (v) Collagen extraction / preparation
- (vi) Miscellaneous

The abstracts for the patent documents identified in Tables 1-3 are **enclosed** in Appendix C in their respective categories.

The abstracts for the remaining national patent documents are **enclosed** in Appendix D. These abstracts have been marked alphabetically and categorised as above in Table 4. As you will note, many of these abstracts are for non-English patent documents. For many of these documents an English language family member may not be available.

Abstracts relating to collagen based materials for wound and tissue repair comprise the bulk of the documents. Unsurprisingly, there is also some overlap of documents relating to this area and pharmaceutical applications of collagen. In the latter instance, many of the “pharmaceutical” documents relate to the use of collagen based materials for delivery of pharmaceutical actives.

As initial observations, we note that the “collagen field” appears to be a broad one with a similarly broad range of interest from different quarters in terms of patenting activity. Only relatively low numbers of patent documents in the name of the better known health care companies were located. Many documents in the wound/tissue repair areas appear to originate from Universities, medical research facilities or lesser known companies. With regard to individual companies involved in the collagen field, a relatively significant number of documents in the name of Collagen Corp (Japan) relating to repair of bone extending up to the early 1990s were found. Further documents in the wound/tissue repair area listing Collagen Corp. (Palo Alto, US) then appear. Whether these companies are related is not known.

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With regard to the cosmetics area, documents listing The Boots Company plc, Societe L'Oreal SA and Merck Gesellschaft were located. Again, however, this area does not appear to be dominated by any particular entity.

In the foodstuffs/casing area a number of documents dated in the early 1990's listing the Japanese company Nippi Collagen Kogyo KK were located. There also seems to be particular interest in extracting collagen from fish skin and jellyfish in Japan.

Please let us know which of the documents are of primary interest to you and we will return to our searcher to obtain full copies of those documents. We will comment further on the search results once those documents are to hand.

Probably the easiest way to proceed is for you to identify abstracts of interest in Tables 1 to 4 with an asterisk and return the marked up tables to us. As noted above, English versions of many of the non-English language documents may not be available. We will immediately return to our searcher upon hearing from you and will undertake a further review of the documents of interest once the full copies of them are to hand.

Please note that searching can never be guaranteed to locate all patent documents relevant to the subject matter of interest. Our searches are based on the records of official and other publicly available databases. They are, therefore, dependent on the databases utilised and the coverage provided by the databases. Databases may for instance not include older documents and may only include information sourced from particular organisations or geographical areas. Moreover, the search scope inherently relies on the key words selected for the search and the search strategy utilised. Our searches are also dependent on the accuracy of the records searched as well as the indexing and classification of the subject matter comprising the records, and they are necessarily limited by cost and time considerations.

As patent applications are not normally published until 18 months from their earliest priority date, there is always the possibility that patent applications relating to the subject matter of interest may have been filed but which were not publicly available for review at the date of the present search.

Please also keep mind that subject matter searches do not consider infringement of existing patent matters, and merely seek to identify patent matters relating to a particular field of technology. Separate "freedom to operate search(es)" would need to be undertaken to identify patents that may present a barrier to the development or commercialisation of a specific product or process.

The abstracts for the documents located in the search are being forwarded to you with the confirmation copy of this letter. As we have received an invoice from our searcher, our invoice covering those charges and our services to date will also follow for your kind attention.

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We look forward to hearing from you shortly as to which of the documents located in the present search you wish us to obtain full copies from our searcher. Should you have any queries regarding the search results or the scope of the search, please do not hesitate to contact us.

Yours faithfully

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SEARCH RESULTS

(Tables 1-4)

Table 1: International (PCT) patent applications

Item	Patent Number	Title
1	WO 2004/112850	Antioxidant wound dressing materials
2	WO 2004/108810	Matrix, cell implantation and method for their production and use
3	WO 2004/108179	Composition for repairing and regenerating human dura mater
4	WO 03/103737	Orthopaedic materials derived from keratin
5	WO 03/101501	A multi-layer collagenic article useful for wound healing
6	WO 02/49449	Protein hydrolysis system
7	WO 02/43628	Method and device for expanding a body cavity
8	WO 02/42779	Assay for the characterization and the quantification of axonal response to chemotropic gradients
9	WO 02/42331	Basic fibroblastic growth factor with specific collagen binding domain
10	WO 02/36147	Mineralization collagen-polysaccharide matrix for bone and cartilage repair
11	WO 02/28417	Methods for treating joints using viscoelastic collagen solutions
12	WO 02/22185	Method for treating a patient using a cultured connective tissue construct
13	WO 02/22184	Methods for treating a patient using a bioengineered flat sheet graft prostheses
14	WO 02/15869	Cosmetic composition
15	WO 02/102851	Use of abalone processing waste
16	WO 02/100453	Crosslinkable macromers
17	WO 01/97871	Collagen hemostatic Pellets
18	WO 01/91774	Method for treating chronic ulcers
19	WO 01/91773	Method of stimulating hair growth
20	WO 01/84949	Protein and lipid sources for use in aquafeeds and animal feeds and a process for their preparation
21	WO 01/70289	Injectable and swellable microspheres for tissue bulking
22	WO 01/66695	Tissue composition using cultured fibroblasts and keratinocytes and methods of use thereof
23	WO 01/66162	Multilayer collagen matrix for tissue reconstruction
24	WO 01/66161	Endovascular graft coatings
25	WO 01/66159	Novel natural polymer-based material with improved properties for use in human and veterinary medicine and the method of manufacturing such
26	WO 01/66130	Product and method for biological anchoring of connective tissue to bone
27	WO 01/36000	Temperature-controlled and Ph-dependant self-gelling biopolymeric aqueous solution
28	WO 01/35968	Methods for inducing chondrogenesis and producing <i>De Novo</i> cartilage <i>In Vetro</i>
29	WO 01/35932	Sustained drug delivery from structural matrices
30	WO 01/32129	Augmentation and repair of age-related soft tissue defects
31	WO 01/26701	Particulate construct for use in the transplantation field
32	WO 01/25403	Bio-artificial substance for the production for animal and, in particular, human tissues and organs
33	WO 01/23529	Bioengineered collagen fibrils
34	WO 01/23016	Intraluminal device, coating for such device, and method for preparing said device
35	WO 01/15750	Hydrogel wound dressing containing liposome-encapsulated

Item	Patent Number	Title
		therapeutic agent
36	WO 01/08715	Reduce antigenicity tissue (rat) implants
37	WO 01/08650	Skin care composition
38	WO 01/07067	Solutions and methods for inhibition of pain, inflammation and cartilage degradation
39	WO 00/78928	Detachment surface
40	WO 00/72883	Pharmaceutical transdermal compositions
41	WO 00/68242	Collagen-binding proteins from enterococcal bacteria
42	WO 00/48550	Device and method for regeneration and repair of cartilage lesions
43	WO 00/47130	Injectable collagen-based system for delivery of cells or therapeutic agents
44	WO 00/47114	Injectable collagen-based delivery system for bone morphemic proteins
45	WO 00/40597	Method and composition for angiogenesis inhibition
46	WO 00/40277	Tissue adhesive for treating vigorously bleeding surfaces
47	WO 00/35372	Multiple matrices for engineered tissues
48	WO 00/33822	Active ingredient matrix in the form of biologically resorbable porous non-woven, method for the production and use thereof
49	WO 00/32252	Skin composites
50	WO 00/23008	Cardiovascular components for transplantation and method of making thereof
51	WO 00/16822	Compositions and method for tissue repair
52	WO 00/13024	Predictive assessment of certain skeletal disorders
53	WO 00/09018	Collagen type I and type III Hemostatic compositions for use as a vascular sealant and wound dressing
54	WO 99/65470	Particulate acellular tissue matrix
55	WO 99/60951	Compositions for regenerating tissue that has degenerated, and methods for using such compositions
56	WO 99/52572	Methods and compositions for tissue regeneration
57	WO 99/52356	Creation of three-dimensional tissues
58	WO 99/50281	Collagen peptides and uses thereof
59	WO 99/43270	Augmentation and repair of dermal, subcutaneous, and vocal cord tissue defects
60	WO 99/42084	Glycosaminoglycan-based extracellular matrix for wound healing
61	WO 99/33447	Tissue regeneration at internal wound sites
62	WO 99/20300	Inhibition of tumour cell adhesion to type IV collagen
63	WO 99/17715	Extracellular matrix production promoter
64	WO 99/12589	Artificial organ
65	WO 99/11656	Protein composition and process for isolating a protein composition from a muscle source
66	WO 99/08717	Latent reactive polymers with biologically active moieties
67	WO 99/05180	Collagen type I and type III adhesive compositions
68	WO 99/03979	Methods for the preparation of artificial cellular tissue
69	WO 98/56399	Type XVIII collagen for detecting liver diseases
70	WO 98/52620	Collagen-like polymers with cell binding activities
71	WO 98/49556	Antibody recognising collagen fragments
72	WO 98/44809	Improved process for the manufacture of collagen
73	WO 98/40027	Augmentation and repair of dermal, subcutaneous, and vocal cord defects
74	WO 98/36705	Augmentation and repair of dermal, subcutaneous, and vocal cord defects

Item	Patent Number	Title
75	WO 98/36704	Augmentation and repair of dermal, subcutaneous, and vocal cord defects
76	WO 98/31403	Lyophilized collagen-based biomaterials, process of preparation and uses thereof
77	WO 98/30141	Devices for tissue repair and method for preparation and use thereof
78	WO 98/22153	Cross-linking of collagen <i>In Situ</i> and uses thereof in wound healing
79	WO 98/06444	Collagen-based blood coagulating foams, method and devices for their delivery
80	WO 98/02520	Fining product
81	WO 97/46266	Improved blood contact surfaces using extracellular matrix synthesized <i>In Vitro</i> Having bioactive species immobilized thereto
82	WO 97/42986	Methods and products for sealing a fluid leak in a tissue
83	WO 97/39715	Compositions and methods for sealing tissue and preventing post-surgical adhesions
84	WO 97/38710	Synthesis of human procollagens and collagens in recombinant DNA systems
85	WO 97/37208	Method for assessing disposable absorbent structures
86	WO 97/32615	Nonpolymeric epoxy compounds for cross-linking biological tissue and bioprosthetic grafts prepared thereby
87	WO 97/31661	An osteogenic device and method for preparing the device
88	WO 97/26023	Wound dressing and apparatus
89	WO 97/25023	Skin treatment formulation and uses there of
90	WO 97/24992	Method for scar collagen formation and contraction
91	WO 97/22371	Crosslinked polymer compositions and methods of their use
92	WO 97/04123	Collagen compound production in plants
93	WO 96/41817	Collagen peptide fraction and its uses
94	WO 96/39202	Biocompatible Hydroxyapatite formulations and uses therefore
95	WO 96/37631	Hide\Leather\Polymer and Hide\Epoxy resin composite materials and methods for making the same
96	WO 96/14095	Synthetic collagen orthopaedic structures such as grafts, tendons and other structures
97	WO 95/31473	Collagen from cell cultures
98	WO 95/26761	Cell-gels
99	WO 95/25550	Biocompatible prosthetic devices
100	WO 95/25482	Three-dimensional bioremodelable collagen fabrics
101	WO 95/22301	Bioremodelable collagen graft prosthesis
102	WO 95/08115	A method of assaying collagen fragments in body fluids, a test kit and means for carrying out the method and use of the method to diagnose the presence of disorders associated with the metabolism of collagen
103	WO 94/10345	Skin treatment
104	WO 93/21857	Prosthetic ligaments
105	WO 93/12736	Mineralized collagen
106	WO 93/00890	Collagen composites for controlled drug release
107	WO 8907603	Nucleic acid isolation
108	WO 89/07761	Enzyme immunoassay according to sandwich method of human iv-type collagen
109	WO 88/08305	Method and apparatus for preparing composite skin replacement
110	WO 88/05633	Protein extracts

Item	Patent Number	Title
111	WO 86/04487	Method for preparing protein hydrolysate appropriate for human consumption from waste and/or slaughter by-products, particularly heads, hocks and skin of pigs
112	WO 86/00788	Separation process with recovery of proteins and fats from substances of animal origin, organic substances or reffluent from working organic substances and a plant to carry out the process
113	WO 85/00511	Collagen ligament and tendon regeneration method and material
114	WO 81/01943	A method for precipitating protein from an aqueous protein-containing liquid and apparatus thereof
115	WO 80/01350	Skin-equivalent

Table 2: United States patent documents

Item	Patent Number	Title
116	US 2005/0064021	Medical dressing
117	US 2005/0059150	Environments that maintain function of primary liver cells
118	US 2005/0054099	Matrix derived form whole organics
119	US 2005/0053638	Organic/inorganic composite biomaterials and process for producing the same
120	US 2005/0033449	Soft tissue substitute and method of soft tissue reformation
121	US 2005/0031741	Collagen casing
122	US 2005/0028228	Acellular tissue matrices made from alpha-1,3-Galactose-deficient tissue
123	US 2005/0002893	Composition consisting of a polymer containing amino groups and an...
124	US 2004/0259972	High density fibrous polymers suitable for implant
125	US 2004/0253678	Novel collagen production method
126	US 2004/0220680	Tissue repair matrix
127	US 2004/0213852	Type II collagen matrices for use in cartilage engineering
128	US 2004/0192603	Substantially non-immunogenic injectable collagen
129	US 2004/0170664	Collagen tubes for nerve regeneration
130	US 2004/0167318	Process for extracting collagen from marine invertebrates
131	US 2004/0138695	Coatings of implants
132	US 2004/0137042	Multi-formed collagenous biomaterial medical device
133	US 2004/0131562	Biomimetic organic/inorganic composites, processes for their production...
134	US 2004/0121943	Drug-free biodegradable 3D porous collagen-glycosaminoglycan scaffold
135	US 2004/0110439	Native protein mimetic fibers, fiber networks and fabrics for medical use
136	US 2004/0087544	Pharmaceutical compositions of topic use, applied in treatment of skin and/or mucous injuries use of compositions in treatment of skin...
137	US 2004/0076647	Liquid collagen hemostat
138	US 2004/0059430	Collagen-based biomaterial for tissue repair
139	US 2004/0037813	Electroprocessed collagen and tissue engineering
140	US 2004/0018592	Bovine collagens and gelatins
141	US 2004/0013712	Collagen membrane arranged at macromolecular level
142	US 2004/0010122	Process for producing insoluble and soluble collagen protein products from poultry skins and use thereof
143	US 2004/0005663	Porcine collagens and gelatins

Item	Patent Number	Title
144	US 2004/0001878	Infused wound care dressings
145	US 2003/0232071	Biomimetic organic/inorganic composites, processes for their production ...
146	US 2003/0211793	Injectable bio-compatible material and methods of use
147	US 2003/0203008	Preparation of collagen
148	US 2003/0181392	Uses of collagen IV
149	US 2003/0181371	Compositions and methods of using callajolie
150	US 2003/0166149	Method for production of hydroxylated collagen-like compounds
151	US 2003/0152556	Fabrication of a cartilage implant
152	US 2003/0149490	Soft tissue substitute and method of soft tissue reformation
153	US 2003/0143564	Collagen XXII, and novel human collagen and uses thereof
154	US 2003/0133916	Tissue regenerative composition, method of making, and method of use...
155	US 2003/0115677	Method of making a collagen membrane from porcine skin
156	US 2003/0109920	Engineered animal tissue
157	US 2003/0100510	Crystallized structure of type IV collagen NC1 domain hexamer
158	US 2003/0095994	Resorbable extracellular matrix containing collagen I and collagen II for reconstruction of cartilage
159	US 2003/0078208	Oral tolerance induction by collagen to prevent allograft rejection
160	US 2003/0072741	Soft tissue devices and methods of use
161	US 2003/0069171	Nutritional composition for the treatment of connective tissue
162	US 2003/0049716	Method of treating wounds by enhancing expression of procollagen
163	US 2003/0044444	Porous extracellular matrix scaffold and method
164	US 2003/0035786	Biological tissue adhesives, articles, and methods
165	US 2003/0032143	Collagen type I and type III compositions for use as an adhesive and sealant
166	US 2003/0023318	Implant and process for producing it
167	US 2003/0014126	Graft prosthesis devices containing renal capsule collagen
168	US 2003/0012741	Process for the preparation of micronised collagen, and its therapeutic applications
169	US 2003/0008831	Type III collagen compositions
170	US 2003/0008830	Composition and method for treating burns and regenerating burn wound tissue
171	US 2003/0007991	Devices including protein matrix materials and methods of making and using...
172	US 2003/0004315	Collagen
173	US 2003/0003157	Collagen compositions and methods for making and using the same
174	US 2002/0177903	Membrane for use in guided tissue regeneration
175	US 2002/0176893	Compositions, implants, methods, and kits for closure of lumen openings, repair of ruptured tissue, and for bulking of tissue
176	US 2002/0173448	Method of inducing or enhancing chondrogenesis with extracellular matrix containing gdf-5
177	US 2002/0170120	Method of making a collagen membrane from porcine skin
178	US 2002/0168400	Collagen/synthetic resin foam wound dressing
179	US 2002/0164793	Skin substitutes and uses thereof

Item	Patent Number	Title
180	US 2002/0160036	Method and membrane for mucosa regeneration
181	US 2002/0142368	Gelatin manufacturing process and product
182	US 2002/0119224	Health chew toy
183	US 2002/0107570	Biocompatible osteogenic band for repair of spinal disorders
184	US 2002/0099434	Biodegradable drug delivery vascular stent
185	US 2002/0085994	A trilayered collagen construct
186	US 2002/0061842	Method for sterilizing a native collagen in liquid medium, sterile native collagen obtained, compositions containing it and uses
187	US 2002/0054901	Methods and compositions for bone graft implants
188	US 2002/0028243	Protein matrix materials, devices and methods of making and using thereof
189	US 2002/0025921	Composition and method for growing, protecting, and healing tissues and cells
190	US 2002/0019663	Method for treating diseased or damaged organs
191	US 2002/0019516	Cross-linked collagen matrices and methods for their preparation
192	US 2002/0013627	Method for promoting regeneration of surface cartilage in a damaged joint using multi-layer covering
193	US 2002/0007221	Methods for soft tissue augmentation
194	US 2001/0037014	Thin mineralized collagen membrane and method of making same
195	US 2001/0010826	Methods for increasing vascularization and promoting wound healing
196	US 2001/0001669	Compound delivery using rapidly dissolving collagen film
197	US 6890351	Method of treating diseased or damaged organs
198	US 6869443	Biodegradable drug delivery vascular stent
199	US 6861505	Method for recovering soluble protein
200	US 6849606	Method of inducing or enhancing chondrogenesis with...
201	US 6833408	Methods for tissue repair using adhesive materials
202	US 6824970	Stabilization of implantable bioprosthetic tissue
203	US 6790454	Process for the preparation of novel collagen-based supports for tissue engineering, and biomaterials obtained
204	US 6773699	Light energized tissue adhesive conformal patch
205	US 6764517	Tissue repair matrix
206	US 6761908	Collagen preparation for the controlled release of active substances
207	US 6759047	Anti-Angiogenic proteins and methods of use thereof
208	US 6752831	Biocompatible osteogenic band for repair of spinal disorders
209	US 6723335	Methods and compositions for treating intervertebral...
210	US 6716246	Process and device for facilitating the implantation...
211	US 6713085	Method and membrane for mucosa regeneration
212	US 6706684	Method for preparing a collagen material with controlled in vivo degradation
213	US 6703025	Multicomponent vaccines
214	US 6699287	Dermal scaffold using alkaline pre-treated chitosan matrix or...
215	US 6682760	Cross-linked collagen matrices and methods for their preparation
216	US 6673370	Oxidized collagen formulations for use with non-compatible pharmaceutical agents

Item	Patent Number	Title
217	US 6660829	Collagen-based dispersion and macroporous structures
218	US 6660522	Epidermis/Dermis equivalents and aged skin equivalents shaped therefrom
219	US 6623963	Cellular matrix
220	US 6605466	Epidermis/Dermis equivalents and aged skin equivalents shaped therefrom
221	US 6596304	Method for preparing two-layer biocomposite collagen material...
222	US 6589326	Coating fluid for imaging element comprising...
223	US 6586406	Method of inducing or enhancing chondrogenesis with...
224	US 6586027	Health chew toy
225	US 6569172	Method, instruments, and kit for autologous transplantations
226	US 6565960	Polymer composite compositions
227	US 6548077	Purifying type II collagen using two papain treatments...
228	US 6541023	Use of collagen of aquatic origin for the production of supports for tissue engineering...
229	US 6521244	Body filling material
230	US 6511958	Compositions for regenerating and repair of cartilage lesions
231	US 6509031	System for polymerizing collagen composites in situ...
232	US 6500464	Bilayered collagen construct
233	US 6482240	Method of making a collagen membrane from porcine skin
234	US 6479072	Microfabricated membranes and matrices
235	US 6444222	Reinforced matrices
236	US 6417166	The mineralized collagen membrane and method of making same
237	US 6391939	Collagenic material useful in particular for preventing post-operative adhesions
238	US 6391538	Stabilization of implantable bioprosthetic tissue
239	US 6387124	Biodegradable drug delivery vascular stent
240	US 6384197	Process for the preparation of mineralized collagen fibrils and their use as bone substitute mineral
241	US 6384196	Process for the preparation of mineralized collagen fibrils and their uses as bone substitute material
242	US 6352558	Method for promoting regeneration of surface cartilage in a damage joint
243	US 6323319	Method of making hydrolysed collagen type II
244	US 6322785	Methods and compositions for bone graft implants
245	US 6310036	High strength bio-compatible tissue adhesive and methods for treating...
246	US 6300315	Materialized collagen membrane and method of making the same
247	US 6287340	Bioengineered anterior cruciate ligament
248	US 6277600	Trimeric Chimera protein and collagen matrix containing chimera protein
249	US 6261587	Methods for increasing vascularization and promoting wound healing
250	US 6224919	Black collagen flat film and foodstuff coated therewith
251	US 6221109	Method of protecting spinal area
252	US 6218360	Collagen based biomaterials and methods of preparation and use
253	US 6197934	Compound delivery using rapidly dissolving collagen film

Item	Patent Number	Title
254	US 6194182	Magnetically oriented tissue-equivalent and biopolymer tubes
255	US 6187743	Composition and method for enhancing wound healing
256	US 6177609	Self-aggravating protein compositions and use as sealants
257	US 6136341	Collagen containing tissue adhesive
258	US 6127143	Preparation of purified and biocompatible collagen using two...
259	US 6060255	Type IV collagen high molecular form and production and diagnostic use thereof
260	US 6046160	Composition and method for enhancing wound healing
261	US 6025327	Hydrolysed collagen type II and use thereof
262	US 5972385	Collagen-polysaccharide matrix for bone and cartilage repair
263	US 5968092	Method for making a biodegradable stent
264	US 5962025	Method for treatment for systemic sclerosis and related fibrotic diseases
265	US 5874537	Method for sealing tissues with collagen-based sealants
266	US 5866165	Collagen-polysaccharide matrix for bone and cartilage repair
267	US 5856184	Isolated domains of type IV collagen to modify cell and tissue interactions
268	US 5840848	Method for preparation of type II collagen
269	US 5814328	Preparation of collagen using papain and a reducing agent
270	US 5807581	Collagen-based injectable drug delivery system and its use
271	US 5785983	Non-porous collagen sheet for therapeutic use, and the method and apparatus for preparing it
272	US 5769883	Biodegradable drug delivery vascular stent
273	US 5741652	Anti-human type IV collagen antibodies and use thereof
274	US 5714582	Invertebrate type V telopeptide collagen...
275	US 5700353	Paper strengthened with solubilized collagen and method
276	US 5691182	Use of isolated domains of type IV collagen to modify cell and tissue interactions
277	US 5698407	Method for the immunological determination of the carboxyterminal...
278	US 5686262	Recycle process for the production of low cost soluble collagen
279	US 5677284	Charged collagen particle-based delivery matrix
280	US 5667961	Skin substitute
281	US 5654135	Biomaterial based on collagen and its application
282	US 5643783	Collagen and uses therefore
283	US 5643569	Preparation of agarose coated, solid agarose-collagen beads containing secretory cells
284	US 5543441	Implants coated with collagen-polymer conjugates
285	US 5531791	Composition for repair of defects in osseous tissues, method of making, and prosthesis
286	US 5523348	Method of preparing collagen-polymer conjugates
287	US 5512291	Method of making restorable vascular wound dressing
288	US 5455231	Mineralized collagen
289	US 5436135	New preparation of placenta collagen, their extraction method and their applications
290	US 5428022	Composition of low type III content human placental collagen
291	US 5416074	Artificial biological membrane
292	US 5376376	Resorbable vascular wound dressings
293	US 5376375	Method augmenting tissue using collagen-polymer conjugates

Item	Patent Number	Title
294	US 5354336	Method for bonding soft tissue with collagen-based adhesives and sealants
295	US 5331092	Process for preparation of collagen containing in major proportion insoluble...
296	US 5316942	Process for the production of low-cost soluble high-molecular weight collagen
297	US 5306500	Method of augmenting tissue with collagen-polymer conjugates
298	US 5304595	Collagen-polymer conjugates
299	US 5290552	Surgical adhesive material
300	US 5274078	Process for producing collagen powder
301	US 5264214	Composition for bone repair
302	US 5219895	Collagen based-adhesive and sealants and methods of preparation and use thereof
303	US 5206028	Dense collagen membrane matrices for medical uses
304	US 5204382	Injectable ceramic compositions and methods for their preparation and use
305	US 5166187	Biomaterials with the base of mixtures of collagen, chitosan ..
306	US 5162114	Bone collagen matrix for xenogenic implants
307	US 5138030	Process for extracting type I collagen form an avian source, and applications thereof
308	US 5106949	Collagen compositions and methods for preparation thereof
309	US 5067961	Non-biodegradable two phase corneal implant and method for preparing the same
310	US 5059425	Bandage comprising of fibrous surface coated with polypeptides with type IV collagen activity
311	US 5037377	Means for improving biocompatibility of implants, particularly of vascular grafts
312	US 5026381	Multi-layered, semi-permeable conduit for nerve regeneration comprised of type I collagen...
313	US 5007925	Prosthetic devices coated with polypeptides with type IV collagen activity
314	US 4975526	Bone collagen matrix for zenogenic implants
315	US 4963146	Multi-layered, semi-permeable conduit for nerve regeneration
316	US 4948540	Method for preparing collagen dressing sheet material
317	US 4863732	Injectable compositions for inductive bone repair
318	US 4837024	Compositions, articles and method for improving wound healing
319	US 4829000	Reconstituted basement membrane complex with biological activity
320	US 4789663	Methods of bone repair using collagen
321	US 4789662	Method for the treatment of periodontal pockets with a composition...
322	US 4780450	Physically stable composition and method of use thereof for osseous repair
323	US 4760131	Wound-healing composition
324	US 4745098	Compositions and method for improving bone healing
325	US 4704131	Medical materials
326	US 4698326	Composition and method for osseous repair
327	US 4623553	Method of producing a bone substitute material
328	US 4615889	Collagen sausage casing and method of preparation

Item	Patent Number	Title
329	US 4604346	Skin-equivalent prepared by the use of punch biopsy
330	US 4597762	Collagen preparation
331	US 4563350	Inductive collagen based bone repair preparation
332	US 4559304	Substratum for cell culture and a method for culturing and isolating cells using the same
333	US 4557764	Process for preparing malleable collagen and the product thereof
334	US 4544516	Collagen orientation
335	US 4533358	Process for producing a shaped product of collagen by syneresis
336	US 4528204	Preparation of hydrolyzed collagen-containing products from non-gelled liquid...
337	US 4488911	Non-antigenic collagen and articles of manufacture
338	US 4455206	Shaped article of collagen and process for preparing same
339	US 4451397	Method of preparing collagen products
340	US 4433043	Water based photosensitive composition with hydrolyzate of mammal collagen
341	US 4426443	Preparation of hydrolysed collagen-containing products from non-gelled...
342	US 4412947	Collagen sponge
343	US 4409332	Collagen-enzyme conjugates that exhibit no inflammatory response..
344	US 4406853	Method of preparation of regenerated fibre collagen condom
345	US 4394370	Bone graft material for osseous defects and method of making same
346	US 4388331	Collagen sausage casing
347	US 4260228	Collagen gel contact lens and method of preparation
348	US 4242291	Collagen reconstitution
349	US 4223984	Collagen soft contact lens
350	US 4115594	Extrudable collagen casing and method of preparation
351	US 4110479	Method of preparing collagen structures
352	US 4096282	Collagen compositions
353	US 4064008	Gelatin extraction
354	US 3993790	Process for making collagen casings using mixed acids
355	US 3949073	Process for Augmenting connective mammalian tissue with...
356	US 3548077	Purifying type I collagen using two papain treatments and reducing...

Table 3: Australian patent applications

Item No	Patent Number	Title
357	AU 669519	Absorbable bone sealant
358	AU 9068531	Concentrating and reclaiming waste...
359	AU 8287267	Animal meat prod.- consisting of fat or lean meat particles adhering to collagen film

Table 4: Abstracts for remaining national patent documents located

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
Wound dressings and materials / tissue repair / bone repair / sealants / prostheses			
S	JP 19910289862	Matoritsukusu Pharm. Inc	Fibrin for biomedical purpose/collagenic coat for wound
AA	JP 19960139316	Collagen Corp.	Collagen composition for reinforcement of hard tissue
AI	JP 19850149101	Collagen Corp	Repairing bone using collagen
AL	JP 19870099615	Collagen Corp	Collagen matrix for repairing bone
AM	JP 19960303577	Agency Ind Science Techn	Composite material of collagen fibre-calcium phosphate containing parallel collagen fibres
AY	JP 19780069286	Miyata Teruo (inventor)	Collagen skin dressing for treating burns
BD	JP 19860072407	Collagen Corp	Collagen/inorganic preparation for repairing bone
BJ	EP 19930304178	Johnson & Johnson Medical	Absorbable bone sealant
BL	CA 19982254350	HSC Res and Dev ltd Partnership	Bioengineering cartilage comprising embedding chondrocytes into hydrogel comprising collagen
BM	CA 19992285161	Ontario Inc	Cultured ligament tissue comprising a ligament-like tissue construct
BQ	CN 20010109205	Inst of Biomedical Engineering	Compound collagen stroma tissue scaffold support
BR	CN 20020111593	Miao Jiuchang (inventor)	Composite non-woven cloth dressing of chitosan, collagen and calcium alginate
BX	DE 19813147727	Rauter Anton (inventor)	Wound healing composition containing collagen

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
CB	DE 19853587857	Collagen Corp	Collagen membrane for medical use
CC	DE 19853588120	Collagen Corp	Bone repair composition comprising collagen for repairing bone defects
CG	EP 20020077989	Iso Tis N V	Biocompatible scaffold as a dermal or cartilage substitute
CH	EP 19900200045	Collagen Corp	Process for making collagen membranous materials
CI	EP 19910200300	Collagen Corp	Bone repair using collagen
CK	FR 19900000870	France Etat Armement	Replacement of connective tissue
CN	GB 19630048185	Biorex Laboratories Ltd	Dental fillers and bone cements comprising collagen
CQ	GB 20030025161	Univ Cambridge Tech	Composite biomaterial comprising collagen, brushite and glycosaminoglycans

Pharmaceutical preparations / formulations / cell cultured related

C	JP 19990200713	Sunstar Inc	Composition for prophylaxis or treatment of hypertension
V	JP 19940113763	Bio Material Kenkyusho KK	Substrat material for cell culture
W	JP 19950029647	Collagen Corp	Bonded collagen/synthetic polymer with homogeneous fiber size distribution
Z	JP 19950117110	Sumitomo Bakelite Co.	Animal cell incubator comprising a collagen gel
AF	JP 19830038117	Collagen Corp	Injectable bridged collagen
AK	JP 19860209418	Minnesota Mining & Mfg	Collagen solution for the eye
BF	JP 19940149556	Sumitomo Bakelite Co	Method for transporting animal cells using colloid solution comprising collagen

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
BN	CA 20052494473	DPM Therapeutics Corp	Stabilized protein compositions for topical administration
BS	CN 20020148992	Xu Qichu (Inventor)	Oral film preparation of collagen B for treating rheumatoid arthritis
BT	CN 200310118994	Fourth Military Medical Univer	Tissue engineering compound material for repairing nerve injury
BW	DE 19991034894	Pharma Concepts Gmbh & Co KG	Collagen particles for use as drug carriers
CA	DE 19853523023	Ruhland Nachf Gmbh Dr	Silver-containing collagen sponges or collagen fasciae

Cosmetic preparations / formulations / uses

AQ	JP 19990322992	Iwase Cosfa KK; Nippon Rikagaku Yakuhin KK	Skin cosmetic comprising water-soluble I type collagen and vitamin C derivative
AR	JP 19990322995	Iwase Cosfa KK; Nippon Rikagaku Yakuhin KK	Skin cosmetic comprising water-soluble I type collagen and water soluble polymer
AT	JP 20010029266	Ichimaru Pharcos Inc	Collagen-containing cosmetic derived from pigment free fish skin
AV	JP 20010368152	Nonogawa Shoji YK	Cosmetic containing marine collagen
BE	JP 19880005654	Heyl Chem Pharm	Cosmetics comprising undulin, procollagen and collagen type I
BO	GB 19720013325	Avicon Inc	Fragrant-containing compositions comprising a fragrant salt
CJ	FR 19870002365		Cosmetological composition for application to skin and comprising native collagen

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
Foodstuffs / Casings			
A	JP 19970259223	Shikada Toshiaki (inventor)	Flat pressed collagen utilising collagen grains
N	JP 19900033455	Nippi Collagen Kogyo KK	Jellyfish-like food composed of collagen
O	JP 19900193243	Nitta Gelatin KK	Food having tangle-like taste and flavour comprising freeze dried mixture containing collagen
P	JP 19910193252	Nippi Collagen Kogyo KK	String of collagen material piled and folded
X	JP 19940243882	Nippi Collagen Kogyo KK	Egg protein-containing collagen for use as casings for livestock meat products
Y	JP 19950022011	Nippi Collagen Kogyo KK	Collagen product containing vegetable dietary fibre
AD	JP 19890028842	Nippi Zerachin Kogyo KK	Improved collagen powder
AG	JP 19830211026	Morikawa Yukiaki (inventor)	Method for preparing wet protein with taste of meat
AS	JP 20010298490	Yokoyama Morisuke	Food and drink comprising type IV collagen
AX	JP 19910115911	Marudai Food	Production of meat-paste food coated with collagen
CP	GB 19970018217	Redbrook Research Limited	Reconstituted meat comprising collagen protein
CT	US 19810258782	Amraf Limited	Meat protein product and process, prepared from meat muscle

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
Collagen extraction / preparation			
B	Katakura Chikkarin Co Ltd	Katakura Chikkarin Co Ltd; Koken KK	Collagen from fish skin and cosmetic containing the collagen
D	JP 19990294887	Fancl Corp	Method for producing II-type collagen without denaturing the collagen
E	JP 20000014283	Air Water Inc	Method for producing collagen from salmon skin
G	JP 20000264654	Osato Sotaro (inventor)	Method for producing collagen (from pig)
H	JP 20020005736	Kankyo Joka Kenkyusho KK	Method of processing collagen and/or gelatin from fish skins or animal hides with ionizing radiation
I	JP 20020197840	Nitta Gelatin KK	Collagen derived from fish
J	JP 20020263407	Tokyo Shibaura Electric Co; Toshiba Engineering Co.	Method and system for recovering collagen from jellyfish
K	JP 20030066318	Air Water Inc	Method for production of collagen from skin of fishes
L	JP 20030097779	Miyagi Prefecture; Onodera Tekkosho KK	Method for producing animal protein such as collagen, gelatin and collagen peptide from animal body tissue
M	JP 20030132199	Nitta Gelatin KK	Method for modifying collagen solution without denaturation of the collagen
R	JP 19910278826	Nippon Kasei Chem	Production of high purity fish scale collagen soluble in acid
T	JP 19920239421	Matoritsukusu Pharmaceut Inc	Fibrin for biomedical purpose/collagenic coat and preparation of same

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
AB	JP 19950209202	Nippon Meat Packers	Denaturated collagen and its production (collagen is extracted from the chord of pig)
AC	JP 19880066921	Nakazono Shuzo (inventor)	Dehydration of water-soluble protein extracted from animal residue with oil under heating
AE	JP 19800083118	Kureha Chemical Ind Co Ltd	Production of collagen fiber molding
AH	JP 19830233524	Watanabe Yakuhin Kogyo KK	Production of liquid or gel of acid collagen fibril for forming coating film
AJ	JP 19850222289	Yoshinaka Reiji (inventors)	Method for purifying collagen in high yield from animal tissues
AZ	JP 19790073689	Kureha Chemical Ind Co Ltd	Manufacture of collagen fibre article from hide
BA	JP 19790100406	Kureha Chemical Ind Co. Ltd	Preparation of porous material of collagen (preparation of soluble bulk collagen)
BB	JP 19800033637	Kureha Chemical Ind Co Ltd	Pretreating method for preparing molded collagenic article
BC	JP 19800033637	Kureha Chemical Ind Co Ltd	Pretreating method for preparing molded collagenic article
BH	JP 19950027456	Imedex	Removal of prion from collagen
BK	EP 1990020202485	Zocchi Michele DR	Method and apparatus or producing human autologous collagen
BP	CN 19960100333	Sun Shuchen (inventor)	Non-denatured extraction of medical collagen from connective tissues of animals

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
BU	EP 19800102007	Hoechst AG	Process for the separation of lipoid and water soluble compounds from raw proteins of animal origin
BZ	EP 19830111630	Pruss Gunter (inventor)	Process and plant for preparation of protein concentrates from animal blood
CF	EP 19900125494	Finsai Srl	Process and system for reclaiming waste products of the farming, food and butchering industries
CO	GB 19860009809	Hodgson Chemicals Limited	Protein product, process for the production of soluble collagen from natural collagen-containing material
CR	IT 19890067808	Michelle Zocchi (inventor)	Production of collagen from harvested fat tissues
CS	IT 19890067783	Michelle Zocchi (inventor)	Production of collagen from harvested fat tissues
Miscellaneous			
F	JP 20000015566	Kanebo Limited	Collagen synthesis promoter and collagen metabolism activator
Q	JP 19910218693	Hokuyoo KK	Collagen-containing impregnant composition and coating composition
U	JP 19930198671	Collagen Corp	Method and apparatus for activating cicatricial tissue
AN	JP 19980306995	Suwelack Skin & Health Care AG	Apparatus for freezing/drying biomatrix obtained from collagen of animal source
AO	JP 19980326229	Sekisui Chemical Co Ltd	Method and reagent for immunoassay of IV type collagen

Abstract	Patent/Application No.	Applicant/Patentee	Title/subject matter
AP	JP 19990053065	Yokoyama Morisuke (inventor)	Measuring reagent for detecting kidney disease
AW	JP 20020177307	Shiseido Co Ltd	IV and VII collagen production promoter
BG	JP 19940308915	Sumitomo Bakelite Co	Method for testing toxicity of animal tissue
BI	JP 19950138504	Sumitomo Electric Industries	Cell culture vessel
BV	DE 20031040684	Henkel KGAA	Topical cosmetic for expressing collagen expression on skin cells
CD	DE 19934309129	Gojic Otmar (inventor)	Process and apparatus for obtaining a concentrated protein extract from farm slurry liquid
CE	DE 19934337754	Gojic Otmar (inventor)	Apparatus for obtaining a concentrated protein extract from farm slurry
CL	FR 19970013671	Gogly Bruno	Device for detecting collagenase activity
CM	FR 20010004825	Oreal	Producing suspension of individual cells from skin equivalent

APPENDIX A

Search Outline

We wish to identify documents relating to methods for the extraction of collagen and to uses of collagen. We are principally interested in extraction of collagen from sheep and cattle hides.

Collagen is a major structural protein of the extracellular matrix of tissue. A number of collagens exist and include fibril-forming collagens, fibril-associated collagens, network-forming collagens and collagen anchor filaments. Fibril-forming collagens such as collagen I comprise the basic structural component of connective tissues. Another main collagen is collagen IV. This collagen is a network-forming collagen found in the sheet like basal laminae (also known as basement membranes) of tissue.

We are primarily interested in collagen I, IV and bovine collagen (collagen b) and the search should focus on extraction and applications of these collagens.

Applications of collagen include in tissue repair and epidermal skin repair, in wound healing, uses as tissue scaffolds, and as biomaterials in tissue engineering. Collagen, therefore, has wide use in pharmaceutical, nutraceutical and cosmetic formulations.

Keywords: Collagen, collagen b, bovine collagen, collagen I, fibril forming collagen(s), collagen IV, collagen extraction.

APPENDIX B

Scope of Datafiles

The Derwent World Patent Index datafile is produced by Derwent Publications in London and is an index of bibliographic and classification data, together with enhanced meaningful titles and plain English abstracts of patents. See Appendix E for details of patent matters covered by this datafile.

The WIPO/PCT Patents Fulltext database covers the full text of PCT published applications issued under the auspices of the World Intellectual Property Organization (WIPO) since 1978.

U.S. Patents Fulltext, produced by The Dialog Corporation, provides access to the complete text of all granted patents issued by the U.S. Patent and Trademark Office (USPTO) since 1976. Published applications issued since March 15, 2001 are also included.

The JAPIO database, provided by the Japan Patent Information Organization, represents the most comprehensive English-language access to Japanese unexamined patent applications (Kokai Tokkyo Koho) published since October 1976.

European Patents Fulltext covers all European patent applications and granted European patents published since the opening of the European Patent Office (EPO) in 1978, and bibliographic records for PCT (Patent Cooperation Treaty) applications transferred to the EPO.

APPENDIX C

APPENDIX D

APPENDIX E

Derwent World Patents Index Country Coverage Starting Dates**Full File Coverage (Chemical - CPI)**

Country Code	Kind Code	Covered in DWPI	Starting date for CPI	Earliest Patent No. included
Argentina				
AR	A	Examined granted patent	1974 - 1976 only	
Australia				
AU	A	Open for Public Inspection without examination	21.12.82	8,172,253
AU	B	Examined and Accepted patent (Online from 9308)	07.01.93	
Austria				
AT	A	Examined accepted specification - Aufgebot	15.03.75	6,708,113
AT	B	Granted patent - Patentschrift (Online from 9303)	15.12.92	
Belgium				
BE	A	Unexamined Application - A0, A3, A4, A5, A6, A7, AB	16.01.70	736,840
BE	B	Patent of Invention - second publication - B3,B5		
BE	T	Transfer to BE national patent from EP application	07.12.79	T 1
Brazil				
BR	A	Unexamined application	16.12.75	7,203,421
BR	A3	Pipeline Patent Application	14.04.98	1100048
Canada				
CA	A	Examined granted patent before 16.10.90 (old law - <2000000) or Unexamined application from 16.10.90 (new law > 2000000) (A1 Online from 9934)	06.01.70	831,201
CA	B	Reissue of original patent (old law)	06.01.70	
CA	C	Granted patent from 16.10.90 (old and new law)	31.03.90	
CA	E	Reissue patents granted after 16.10.90 (old and new law)	04.12.90	
China				
CN	A	Unexamined application	10.09.85	8,500,001
CN	C	Granted patent (from 01.01.93)	05.01.94	
Czechoslovakia				
CS	A	Patent Application - A1 Authors certificate; Patent application published in the course of examination (Online from 9232) - A2	28.03.75	6,102,221
CS	B	Granted patent (Online from 9301)	15.07.92	
Czech Republic				
CZ	A3	Unexamined application (Online from 9417)	01.01.93	
CZ	B6	Granted patent (Online from 9417)	17.03.93	
Denmark				
DK	A	Open for public inspection application	14.10.74	7,301,111
DK	B	Granted patent (Online from 9301)	23.11.92	
European				
EP	A	Unexamined application - A1, A2, A3, A4	20.12.78	1
EP	A8	Corrected title page of an A document	14.03.2001	
EP	A9	Complete reprint of an A document	14.03.2001	
EP	B	Granted patent - B1,B2	07.01.81	1
EP	B8	Corrected title page of a B document	14.03.2001	

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EP	B9	Complete reprint of a B document	14.03.2001	
Finland				
FI	A	Unexamined application	30.09.74	7,202,632
FI	B	Examined patent application (Online from 9302) - B; Granted patent (online from 9733) - B1	30.11.92	
France				
FR	A	Open for public inspection application - A1, A2, A3	14.11.69	2,003,954
FR	E	Certificate of addition to a patent of invention (until 1969)		
FR	M	Special patent for medicament or certificate of addition to it (until 1979)		
Germany (East)				
DD	A	Examined Searched Application - A3, A4; Granted patent - A5; A7, A8; Offenlegungsschrift - A9	20.10.69	69,362
DD	B	Examined patent - B1, B3; Granted patent - second publication - B5	05.03.70	26,488
DD	C	Corrected Exclusive patent - C2, C4, C5	24.10.90	
Germany				
DE	A	Open for public inspection application - A, A1 (Online from 9301)	02.01.70	1,808,388
DE	B	Examined accepted specification (Online from 1974-1981)	02.01.70	1,401,524
DE	C	Granted patent from 1981 (Online from 8138 to 9252)	10.09.81	2,537,799
DE	C1	Examined patent - first publication (Online from 9301) Patentschrift (PS)	24.12.92	
DE	C2	Examined patent - second publication (Online from 9301)	24.12.92	
DE	E	Granted EP in English or French with DE assigned serial number	14.02.80	2,860,001
DE	G	Granted EP assigned with DE number prior to 1989, Granted EP in German (Online from 8901)	14.02.80	2,860,001
DE	U	Utility Model - Gebrauchsmuster (Online from 9626) - U1	23.05.96	
DE	T	World patent application (PCT) transfer to DE	10.02.83	3,050,149
Hungary				
HU	A	Application - A, A1 A2		
HU	B	Patent Specification (Online from 9302)		
HU	H	Open for public inspection application	28.05.75	H 1,910
HU	T	English language abstracts of Hungarian patents (Online from 9223)	28.05.75	T 9,804
Ireland				
IE	A	Patent Specification	1963 - 1969 only	
IE	B	Granted patent (Online from 9517) - 20 year patent	25.01.95	
IE	B3	Short patent (Online from 9517) - 10 year patent	08.02.95	
Israel				
IL	A	Accepted application open for inspection	13.03.75	33,310
Italy				
IT	B	Unexamined granted patent	30.09.77	1,018,001
Japan				
JP	A	Unexamined open for public inspection application	16.07.71	46- 1

A.COP.0028 -Patent search, Extraction and uses of collagen

JP	B	Examined patent - B; Examined patent (Tokkyo koho) (Online from 9408 to 9618) - B2. Registered (granted) patent (toroku) (Online from 9626) - B2, or B1 if not previously published as A document. .	05.01.70	45- 1
JP	W	World patent application (PCT) transfer originating from abroad	08.01.81	56- 500,001
JP	X	World patent application (PCT) transfer originating from Japan	05.03.81	
JP	Y	PCT transfer to Utility Model originating from abroad	07.05.81	
JP	Z	PCT transfer to Utility Model originating from Japan	11.03.82	
Korea				
KR	A	Examined patent application (online from 9801)	21.1.97	97000001
KR	B	Examined patent	30.01.86	8,600,001
			(incomplete coverage from 1991 - 1993)	
KR	B1	Examined patent (Online from 9252)	06.01.92	
Luxembourg				
LU	A	Patent granted without examination	24.09.84	85,225
LU	A1	Patent application with search report (online from 9907)		
LU	A2	Patent application without search report (online from 9907)		
Mexico				
MX	A	Granted patent (Online from 9816)	01.01.97	183632
MX	B	Granted patent	01.01.97	
MX	A1	Patent Application	01.01.97	
MX	A2	Patent Application	01.01.97	
MX	A3	Patent Application	01.01.97	
Netherlands				
NL	A	Unexamined application	31.01.70	6,801,905
NL	B	Examined accepted patent	16.11.70	
NL	C2	20-year New law granted patent (Online from 9608)	18.05.95	
NL	C6	6 year New law petty patent (Online from 9608)	18.05.95	
Norway				
NO	A	Unexamined application Open for public inspection	04.11.74	7,204,518
NO	B	Examined accepted application (Online from 9301) - B; Granted patent (online from 9718) - B1	23.11.92	
New Zealand				
NZ	A	Examined patent (Online from 9301)	28.10.92	
PCT				
WO	A	Open for public inspection Application - A1, A2, A3	19.10.78	7,800,001
Philippines				
PH	A	Granted Patent (available online from 9511)	13.01.92	
Portugal				
PT	A	Application Open for public inspection	04.10.74	51,859
Romania				
RO	A	Granted patent according to 1974 law	01.06.75	52,971
RO	B/B1	Granted patent according to 1991 law	25.09.92	
Russian Federation				
RU	C/C1	Granted patent of invention (Online from 9406)	07.09.93	
RU	C2	Granted patent of invention		

Singapore					
SG	A	Registrations via GB or EP designating GB (Online from 9513) - A. Patent Applications (Online from 9631) - A1	13.01.95		
Slovakia					
SK	A3	Patent application (Online from 9417)	07.07.93		
SK	B6	Granted application (Online from 9422)	08.12.93		
South Africa					
ZA	A	Patent specification accepted without examination	Feb-70	684,725	
ZA	AA	Second application with same number	26.06.74		
Soviet Union					
SU	A	Examined granted patent - A1, A2, A3, A4	Dec-69	218,265	
SU	B	Reissued patent	05.05.80		
Spain					
ES	A	Patent granted without examination - A1, A2, A6	01.07.83	8,305,181	
ES	B	Patent published with search report - B, B1	16.08.93		
ES	T1	Translation of the claims with drawings of EP application	01.04.92		
ES	T3	Translation of granted EP patent	01.04.92		
Sweden					
SE	A	Unexamined application open for public inspection	23.09.74	7,302,201	
SE	B	Examined application (Online from 8701)	15.12.86	447,783	
SE	C2	Granted patent - new law	18.09.95		
Switzerland					
CH	A	Granted unexamined patent	27.02.70	483,766	
CH	A3	Searched and Examined specification from 1978	15.08.78		
CH	A5	Granted unexamined patent	30.05.75		
CH	B	Examined accepted specification	15.08.78	607,556	
CH	B5	Examined accepted specification	15.01.93		
Taiwan					
TW	A	Unexamined granted patent	01.01.93		
United Kingdom					
GB	A	Examined granted specification (<2000000)	07.01.70	1,176,501	
GB	A	Open for public inspection application (2000000+)	04.01.79	2,000,001	
GB	B	Granted patent specification (Online from 8206)	06.01.82	2,000,001	
United States					
US	A	Examined granted patent & NTIS published invention application (prior to 02.01.01)	06.01.70	3,487,470	
US	A1	Patent Application Publication	02.01.01		
US	A2	Second or subsequent publication of a Patent Application	02.01.01		
US	A9	Correction publication of a Patent Application	02.01.01		
US	B	Re-examination certificate - B, B1, B2, B3 (prior to 02.01.01)	29.12.81	3,367,320	
US	B1	Patent - no-pre-grant publication	02.01.01		
US	B2	Patent - with pre-grant publication	02.01.01		
US	Cn	Reexamination Certificate (where n=1-9)	02.01.01		
US	E	Reissue patent	06.01.70	Re.26,751	
US	H	Statutory invention registration, SIR (replaces defensive publication)	30.11.71	T 892,018	

Derwent World Patents Index Country Coverage Starting Dates**Full File Coverage (Engineering -EPI/EngPI)**

Information on the initial dates of coverage for each country included in Derwent World Patents Index.

Country	Country Code	Status Code	Covered in DWPI	Starting date for EPI/EngPI	Earliest Patent No. included
Argentina	AR	A	Examined granted patent	1974 - 1976 only	
Australia	AU	A	Open for Public Inspection without examination	21.12.82	8,172,253
Australia	AU	B	Examined and Accepted patent (Online from 9308)	07.01.93	
Austria	AT	A	Examined accepted specification - Aufgebot	15.03.75	6,708,113
Austria	AT	B	Granted patent - Patentschrift (Online from 9303)	15.12.92	
Belgium	BE	A	Unexamined Application - A0, A3, A4, A5, A6, A7, AB	25.02.74	803,904
Belgium	BE	B	Patent of Invention - second publication - B3,B5	.	.
Belgium	BE	T	Transfer to BE national patent from EP application	07.12.79	T 1
Brazil	BR	A	Unexamined application	16.12.75	7,203,421
Canada	CA	A	Examined granted patent before 16.10.90 (old law - <2000000) or Unexamined application from 16.10.90 (new law > 2000000)	05.03.74	942,901
Canada	CA	B	Reissue of original patent (old law)	05.03.74	
Canada	CA	C	Granted patent from 16.10.90 (old and new law)	04.12.90	
Canada	CA	E	Reissue patents granted after 16.10.90 (old and new law)	04.12.90	
China	CN	A	Unexamined application	10.09.85	8,500,001
China	CN	C	Granted patent (from 01.01.93)	05.01.94	
Czechoslovakia	CS	A	Patent Application - A1 Authors certificate; Patent application published in the course of examination (Online from 9232) - A2	28.03.75	6,102,221
Czechoslovakia	CS	B	Granted patent (Online from 9301)	15.07.92	
Czech Republic	CZ	A	Unexamined application (Online from 9417) - A2, A3	01.01.93	
Czech	CZ	B6	Granted patent (Online from 9417)	17.03.93	

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Republic					
Denmark	DK	A	Open for public inspection application	14.10.74	7,301,111
Denmark	DK	B	Granted patent (Online from 9301)	23.11.92	
European	EP	A	Unexamined application - A1, A2, A3, A4	20.12.78	1
European	EP	B	Granted patent - B1,B2	07.01.81	1
Finland	FI	A	Unexamined application	30.09.74	7,202,632
Finland	FI	B	Examined patent application (Online from 9302)	30.11.92	
France	FR	A	Open for public inspection application - A1, A2, A3	18.01.74	2,187,200
France	FR	E	Certificate of addition to a patent of invention (until 1969)		
France	FR	M	Special patent for medicament or certificate of addition to it (until 1979)		
Germany (East)	DD	A	Examined Searched Application - A3, A4; Granted patent - A5; A7, A8; Offenlegungsschrift - A9	05.01.74	102,894
Germany (East)	DD	B	Examined patent - B1, B3; Granted patent - second publication - B5	20.01.74	53,733
Germany (East)	DD	C	Corrected Exclusive patent - C2, C4, C5	24.10.90	
Germany	DE	A	Open for public inspection application - A, A1 (from	07.03.74	1,966,214
Germany	DE	B	Examined accepted specification (Online from 1974-1981)	07.03.74	1,303,863
Germany	DE	C	Granted patent from 1981 (Online from 8138 to 9252)	10.09.81	2,537,799
Germany	DE	C1	Examined patent - first publication (Online from 9301) Patentschrift (PS)	24.12.92	
Germany	DE	C2	Examined patent - second publication (Online from 9301)	24.12.92	
Germany	DE	E	Granted EP in English or French with DE assigned serial number	14.02.80	2,860,001
Germany	DE	G	Granted EP assigned with DE number prior to 1989, Granted EP in German (Online from 8901)	14.02.80	2,860,001
Germany	DE	U	Utility Model - Gebrauchsmuster (Online from 9626) - U1	23.05.96	
Germany	DE	T	World patent application (PCT) transfer to DE	10.02.83	3,050,149

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Hungary	HU	A	Application - A2		
Hungary	HU	B	Patent Specification (Online from 9302)		
Hungary	HU	H	Open for public inspection application	28.05.75	H 1,910
Hungary	HU	T	English language abstracts of Hungarian patents (Online from 9223)	28.05.75	T 9,804
Ireland	IE	A	Patent Specification	1963 - 1969 only	
Ireland	IE	B	Granted patent (Online from 9517) - 20 year patent	25.01.95	
Ireland	IE	B3	Short patent (Online from 9517) - 10 year patent	08.02.95	
Israel	IL	A	Accepted application open for inspection	13.03.75	33,310
Italy	IT	B	Unexamined granted patent	30.09.77	1,018,001
Japan	JP	A	Unexamined open for public inspection application	05.01.82 (Full coverage from Jan. 1996)	57- 1
Japan	JP	B	Examined patent - B; Examined patent (Tokkyo koho) (Online from 9408 to 9618) - B2. Registered (granted) patent (toroku) (Online from 9626) - B2.		
Japan	JP	W	World patent application (PCT) transfer originating from abroad	08.01.81	56-500,001
Japan	JP	X	World patent application (PCT) transfer originating from Japan	05.03.81	
Japan	JP	Y	PCT transfer to Utility Model originating from abroad	07.05.81	
Japan	JP	Z	PCT transfer to Utility Model originating from Japan	11.03.82	
Korea	KR	A	Examined patent application (online from 9801)	21.1.97	97000001
Korea	KR	B	Examined patent	30.01.86 (incomplete coverage from 1991 - 1993)	8,600,001
Korea	KR	B1	Examined patent (Online from 9252)	06.01.92	
Luxembourg	LU	A	Patent granted without examination	24.09.84	85,225

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Mexico	MX	A	Granted patent (Online from 9816)	01.01.97	183632
Mexico	MX	B	Granted patent	01.01.97	
Mexico	MX	A1	Patent Application	01.01.97	
Mexico	MX	A2	Patent Application	01.01.97	
Mexico	MX	A3	Patent Application	01.01.97	
Netherlands	NL	A	Unexamined application	26.02.74	7,211,428
Netherlands	NL	B	Examined accepted patent	16.04.74	141,753
Netherlands	NL	C2	20-year New law granted patent (Online from 9608)	18.05.95	
Netherlands	NL	C6	6 year New law petty patent (Online from 9608)	18.05.95	
Norway	NO	A	Unexamined application Open for public inspection	04.11.74	7,204,518
Norway	NO	B	Examined accepted application (Online from 9301)	23.11.92	
New Zealand	NZ	A	Examined patent (Online from 9301)	28.10.92	
PCT	WO	A	Open for public inspection Application - A1, A2, A3	19.10.78	7,800,001
Philippines	PH	A	Granted Patent (available online from 9511)	13.01.92	
Portugal	PT	A	Application Open for public inspection	04.10.74	51,859
Romania	RO	A	Granted patent according to 1974 law	01.06.75	52,971
Romania	RO	B/B1	Granted patent according to 1991 law	25.09.92	
Russian Federation	RU	C/C1	Granted patent of invention (Online from 9406)	07.09.93	
Singapore	SG	A	Registrations via GB or EP designating GB (Online from 9513) - A. Patent Applications (Online from 9631) - A1	13.01.95	
Slovakia	SK	A3	Patent application (Online from 9417)	07.07.93	
Slovakia	SK	B6	Granted application (Online from 9422)	08.12.93	
South Africa	ZA	A	accepted without examination	02.02.74	7,203,361
South Africa	ZA	AA	Second application with same number	26.06.74	
Soviet Union	SU	A	Examined granted patent - A1, A2, A3, A4	08.01.73	145,720

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Soviet Union	SU	B	Reissued patent	05.05.80	
Spain	ES	A	Patent granted without examination - A1, A2, A6	01.07.83	8,305,181
Spain	ES	B	Patent published with search report - B, B1	16.08.93	
Spain	ES	T1	Translation of the claims with drawings of EP application	01.04.92	
Spain	ES	T3	Translation of granted EP patent	01.04.92	
Sweden	SE	A	Unexamined application open for public inspection	23.09.74	7,302,201
Sweden	SE	B	Examined application (Online from 8701)	15.12.86	447,783
Sweden	SE	C2	Granted patent - new law	18.09.95	
Switzerland	CH	A	Granted unexamined patent	15.05.74	548,731
Switzerland	CH	A3	Searched and Examined specification from 1978	15.01.93	
Switzerland	CH	A5	Granted unexamined patent	30.05.75	
Switzerland	CH	B	Examined accepted specification	15.08.78	607,556
Switzerland	CH	B5	Examined accepted specification	15.01.93	
Taiwan	TW	A	Examined granted patent	01.01.93	
United Kingdom	GB	A	Examined granted specification (<2000000)	13.03.74	1,348,001
United Kingdom	GB	A	Open for public inspection application (2000000+)	04.01.79	2,000,001
United Kingdom	GB	B	Granted patent specification (Online from 8206)	06.01.82	2,000,001
USA	US	A	Examined granted patent & NTIS published invention application	05.03.74	3,795,014
USA	US	B	Re-examination certificate - B, B1, B2, B3	29.12.81	3,367,320
USA	US	E	Reissue patent	12.03.74	Re.27,938
USA	US	H	Statutory invention registration (replaces defensive publication)	05.03.74	T 920,001

**ESPACE NET Worldwide Database - Facsimile and
Classification Coverage**

Country	Bibliographic data	Abstracts	Images	IPC	ECLA
AP	from begin	no	from begin	from begin	from begin
AR	from 1973 to 1991	no	no	from 1975	
AT	from begin	from 1990	from begin	from 1972	from 1970 for first filings
AU	from 1973	no	no	from 1973	from 1973 for first filings
BA	from 1998	no	from 1998	from 1998	
BE	from 1964	from 1990	from 1920	from 1970	from 1926
BG	from 1973	from 2000	from 1993	from 1973	
BR	from 1974	no	no	from 1975	
CA	from 1970	no	only first filings from 1915	from 1979	from 1970 for first filings
CH	from begin	from 1970	from begin	from 1965	from 1920
CN	from 1985	from 1990	no	from 1986	
CS	from 1973 to 1992	no	no	from 1973	
CU	from 1974 to 1975	no	no	from 1974	
CY	from 1975	no	from 1998	from 1975	
CZ	from 1993	from 2000	no	from 1993	
DD	from 1973	no	from begin	from 1973	
DE A-C	from 1920	from 1970	from begin	from 1972	from begin
DEU	from 1973	no	from 1929	from 1973	from 1985
DK	from 1920	from 1990	from 1920	from 1969	
EA	from 1996	no	no	from 1996	
EE	from 1995	no	from 1995	from 1995	
EG	from 1976	no	no	from	

				1976	
EP	from begin	from begin	from begin	from begin	from begin
ES	from 1968	from 1983	from 1964	from 1968	
FI	from 1975	from 1985	from 1920	from 1969	
FR	from 1920	from 1970	from 1920	from 1969	from 1902
GB	from 1920	from 1970	from 1920	from 1973	from 1909
GR	from 1977	from 1996	from 1976	from 1978	
HK	from 1976	no	no	from 1976	
HR	from 1994	no	no	from 1994	
IE	from 1930	from 1990	from 1929	from 1930	
IL	from 1968	no	no	from 1968	
IN	from 1975	no	no	from 1975	
IT	from 1973	from 1993	from 1985	from 1973	
JP A-C	from 1973	from 1973	from 1920	from 1973	
KE	from 1975	no	no	from 1975	
KR	from 1978	from 1979	no	from 1979	
LT	from 1994	from 2001	no	from 1994	
LU	from 1960	no	from 1945	from 1973	from 1946
LV	from 1994	from 1999	no	from 1994	
MC	from 1975	no	from begin	from 1958	from begin
MD	from 1994	from 2000	no	from 1994	
MN	from 1972 to 1989	no	no	from 1973	
MT	from 1967 to 1992	no	no	none	
MW	from 1973 to 1994	no	no	from 1973	
MX	from 1981 to 1994	no	no	from 1981	
MY	from 1953 to 1996	no	no	from 1953	

NL	from 1964	from 1990	from begin	from 1964	from begin
NO	from 1973	no	no	from 1973	
NZ	from 1978 to 1999	from 1999	no	from 1984	
OA	from 1966	no	from begin	from 1966	
Countr y	Bibliographic data	Abstract s	Images	IPC	ECLA
PH	from 1975 to 1997	no	no	from 1975	
PL	from 1973	no	no	from 1073	
PT	from 1976	from 1990	from 1980	from 1976	
RO	from 1973	from 1999	from 1973	from 1973	
RU	from 1993	from 1998	no	from 1993	
SE	from 1973	from 1990	from 1920	from 1968	
SG	from 1983	no	no	from 1983	
SI	from 1992	from 1998	no	from 1992	
SK	from 1993	from 1993	no	from 1993	
SU	from 1972 to 1992	from 1998	from 1970	to 1994	from 1972
TJ	from 1998	no	no	from 1998	
TR	from 1973	no	no	from 1976	
TW	from 1983	from 2000	no	from 2000	
US	from 1920	from 1970	from 1836	from 1969	from 1920
VN	from 1984 to 1997	no	no	from 1984	
WO	from 1978	from 1978	from 1978	from begin	from begin
YU	from 1973 to 1986	no	no	from 1973	
ZA	from 1971	no	no	from 1971	
ZM	from 1968 to 1994	no	no	from 1969	
ZW	from 1980 to 1993	no	no	from 1980	

