Species Summary Tables

The following summary tables describe the species and patent activity involving the species. This data falls into three categories:

a) Of Kenyan origin - Patents where a named species has been identified as having been obtained from Kenya.
b) With Kenyan distribution - Patents where there is no reference to Kenya but distribution data suggests that the species may have originated from Kenya (Distribution).
c) For the sake of completeness we include a final section on 'other species' of interest that appear in patent documents and are of potential interest. Patents in this group either target the organism (i.e. with a pesticide) or make reference to the organism in the course of the application.

In reading these tables note that the number of documents refers to the number of documents retained during research on the origin of species of relevance to Kenya. It does not refer to the wider patent landscape for the species consisting of the total of number of documents making reference to the species, or its components, in the global patent system.

Species may appear in patent documents in this list for a variety of reasons:

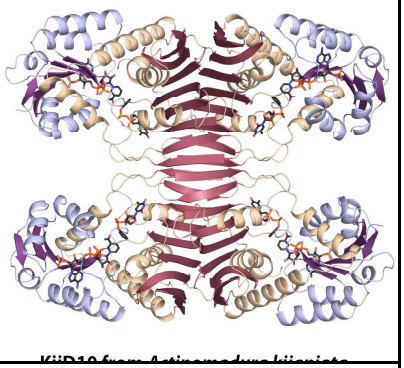
1. Because they are a focus of the invention;
2. Because they are a target of the invention (i.e. pathogens);
3. Because they are incorporated into the claims of the invention;
4. Because a reference to a species, including in very limited cases a literature reference, indicates that the species is of potential interest for economic development and merits further investigation.

This report focuses on identifying species that are of potential interest for economic development and conservation based on their appearance in patent data. The data in this summary section should not be used to draw conclusions about misappropriation or biopiracy.

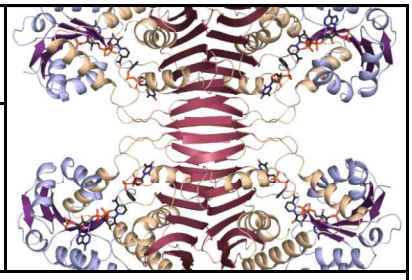
With Kenyan Distribution

Species name: *Acokanthera ouabaio* *(Acokanthera schimperi)*	Kingdom: Plantae	
Brief description of species: Acokanthera ouabaio is a synonym for Acokanthera schimperi. It occurs in Eritrea, Ethiopia, Somalia, Kenya, Uganda, Tanzania, Rwanda and DR Congo. It is the only species that also occurs outside Africa, in southern Yemen. Bark, wood and roots are used as arrow poison.		
Distribution: Cosmopolitan	No of documents: 5	
EP0475160A1; US6165500A; US2007042030A1; WO1992003122A1; WO2010036973A1;		
Detail: This species appears as part of lists of species and in lists of potential extracts, It is referenced as a source of the Oubain compound in WO2010036973A1		

Of Kenyan origin

Species name: *Actinomadura kijaniata*	Kingdom: Bacteria	
Brief description of species: New species of bacteria isolated from soil sample collected in Kenya.This species can utilize a wide variety of carbohydrates, grow in the presence of numerous antibiotics, and actively hydrolyze many organic compounds. See also the second entry for this species below.		
Distribution: Uncertain	No of documents: 1	
EP0033840A2		
Detail: This species appears as a source of the compound Kijanimim in EP0033840A2.		

With Kenyan distribution

Species name: *Actinomadura kijaniata*	Kingdom: Bacteria	
Brief description of species: Filamentous bacteria found in soil. Discovered circa 1981 in 'African soil'. It, or strains derived from it, are used in pharmaceuticals in anti-viral & anti-fungal applications.		
Distribution: Uncertain	No of documents: 16	
EP0033840A2 EP0175284A2 EP0277621A1 US4752605A US4870165A US4983525A US4990497A US5002891A US5110960A US5140101A US5256548A US5427941A US5494913A US2009111163A1 WO1998011230A1 WO2008130394A2		
Detai:. Patents by Bristol Myers Squibb reference the species in comparison with the species that is the target of the invention. In other cases references are made to literature. US5002891A includes a genus level claim including plasmids from this species. WO1998011230A1 refers to Actinomadura polyketide synthase genes and applies to members of the genus in general.		

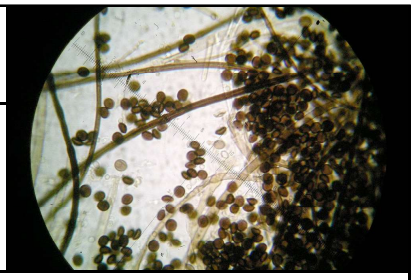
With Kenyan distribution

Species name: *Aloe nyeriensis*	Kingdom: Plantae	
Brief description of species: Aloe species endemic to Kenya.		
Distribution: Endemic	No of documents: 3	
WO2010045243A1 US2010092585A1 US2009317429A1		
Detail: Species is referenced in lists in patents for sources of cardiac glycosides (US2010092585A1), Members of Aloe genus for use in cosmetics in WO2010045243A1, and *Aloe vera* as the focus in US2009317429A1.		

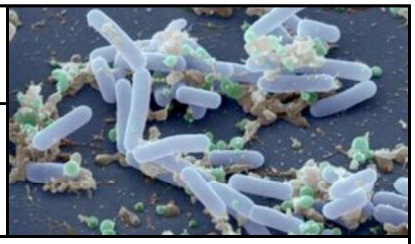
With Kenyan distribution

Species name: *Anaerobranca bogoriae*	Kingdom: Bacteria	No Image Available
Brief description of species: Named after Lake Bogori in Kenya.Thermophilic microorganisms producing cyclodextrin glycosyltransferase for invention.		
Distribution: Endemic	No of documents: 1	
WO2003002728A2		
Detail: References thermophilic microorganisms as sources of Thermostable cyclodextrin glycosyltransferases with example of uses including glycosylation of intense sweetener stevioside from *Stevia rebaudania*.		

Of Kenyan origin

Species name: *Ascotricha amphitrica*	Kingdom: Fungi	
Brief description of species: Ascotricha is a genus of fungi in the family Xylariaceae according to the 2007 Outline of Ascomycota, the placement in this family is uncertain.		
Distribution: Cosmopolitan	No of documents: 1	
US5521169A		
Detail: Used to produce ascosteroside for anti-fungal & disinfectant for surgical instruments. The applicant states that the strain was isolated from a soil sample obtained in Kenya.		

Of Kenyan origin

Species name: *Bacillus pumilus*	Kingdom: Bacteria	
Brief description of species: Organisms isolated from alkaline soda lake in Kenya. Used in the paper pulping industry.		
Distribution: Uncertain	No of documents: 1	
EP0686193B1		
Detail: The applicant states that “The present invention relates to SEQ ID 19 isolated from microorganisms which have been isolated from soil and water samples collected in the environment of alkaline soda lakes in kenya, East-Africa. These microorganisms have been characterized as being alkaliphilic, Gram-positive and belonging to the genus Bacillus.”		

Of Kenyan origin

Species name: *Bacillus thuringiensis*	Kingdom: Bacteria	
Brief description of species: Bacillus thuringiensis is a Gram-positive, soil-dwelling bacterium, commonly used as a biological pesticide. A novel strain from Kenyan soil samples is being used in plant biotechnology.		
Distribution: Cosmopolitan	No of documents: 1	
US6043415A		
Detail:Detail: The patent application focuses on a synthetic cryIC gene that can be transferred into plants. The synthetic CryICa5 protein sequence is based on the sequence of the wild type gene identified from sequencing three strains collected from soil samples in Kenya and Israel. The patent focuses on a method for constructing the synthetic gene with the aim of expression in plants to create insect resistant transgenic plants.		

Of Kenyan origin

Species name: *Bos taurus*	Kingdom: Animalia	
Brief description of species: Zebus, sometimes known as humped cattle or Brahman cattle, are a type of domestic cattle originating in the Indian Subcontinent.		
Distribution: Cosmopolitan	No of documents: 1	
US2002007497A1		
Detail: This unusual patent application by A2 Corp Ltd is based on the observation that certain peoples including Tibetans, rural Gambians, and the Masai and Samburu people in Kenya do not suffer from certain diseases that have been associated with milk. The applicants state that: “The only major difference between the milk consumed by the above people is that it is derived from Zebu, Bos Indicus, and Yak, Bos Mutus. Neither milk contains the casein allele described as β-casein A.” As such the invention is based on the realisation that the immunosuppressant protein BCA from the β-casein A1 allele causes negative effects. The objective of the invention is: a) to select animals that produce milk that lacks this allele and; b) to provide milk and milk products free of the allele. The example usefully highlights that milk may have different properties that can serve particular market segments. Details on marketed products are provided at http://www.a2corporation.com		

Of Kenyan origin

Species name: *Camellia sinensis*	Kingdom: Plantae	
Brief description of species: Camellia sinensis is the species of plant whose leaves and leaf buds are used to produce the popular beverage tea. It is of the genus Camellia, a genus of flowering plants in the family Theaceae.		
Distribution: Cosmopolitan	No of documents: 4	
WO2008065007A2 WO2002069727A US2008131558A1 US2008107774A1		
Detail: Patent documents frequently reference Kenya as a source of tea. However, these patents rarely involve the genetics of tea. WO2002069727A refers to Kenyan Clone 35 obtained from 30 Brooke Bond Kenya plantations that was processed through withering and macerated to a particular moisture content to introduce morphological changes in the cell tissue. WO2008065007A2, US2008131558A1 focuses on tea enriched with theaflavins and catechins in a reaction mixture. The patent states that Kenya Clone 35 was flown fresh from Kenya to Bedfordshire, UK with a 20 hour period between picking and arrival. US2008107774A1 focuses on preparing a tea or tea extract rich in theanine including physical separation and treatment of the stem using withering, maceration, grinding, steaming, fermentation, firing and infusion. These examples are included to illustrate the typical of innovations involving this species.		

Of Kenyan origin

Species name: *Chrysanthemum cinerariaefolium*	Kingdom: Plantae	
Brief description of species: Chrysanthemums are of particular importance as they are used as a source for pyrethrum, a natural insecticide. See also references to unnamed species below.		
Distribution: Cosmopolitan	No of documents: 2	
WO2007031561A US2007148204A1 EP0761097A1		
Detail: Applicants make reference to the Pyrethrum Board of Kenya as an example of a source of natural pyrethrum. http://www.kenya-pyrethrum.com		

Of Kenyan origin

Species name: *Euprosthenops sp*	Kingdom: Animalia	
Brief description of species: Genus of spider. Used for DNA extraction in patents referring to spider silk proteins.		
Distribution: Cosmopolitan	No of documents: 1	
WO2004016651A		
Detail: The patent application focuses on DNA molecules for producing spider silk polypeptides for medical or industrial materials such as artificial tendons, ligaments, sutures, bullet proof vests or ropes. The applicants state that “Adult Euprosthenops spiders were captured in Kenya and maintained under 10 laboratory conditions in clear Perspex boxes.” No patent was granted, however, this application is cited by others reporting the collection of spiders for a similar purpose in South Africa.		

With Kenyan distribution

Species name: *Ganoderma simulans*	Kingdom: Fungi	
Brief description of species: Ganoderma is a genus of polypore mushrooms which grow on wood, and include about 80 species. This species appears in patents for methodologies for the cultivation of microbial cells.		
Distribution: Cosmopolitan	No of documents: 6	
US2009005340A1 US2009143280A1 US2010086647A1 WO2006119774A1 WO2006133707A2 WO2006133708A1		
Detail: *Ganoderma simulans* is a widely distributed species. It appears in the patent data for bioactive agents from the fermentation of fungi for fish feed. It also appears in a patent for pharmaceutical kits. The species appears as part of long lists, including large numbers of *Ganoderma*. As such, patents frequently focus on incorporating this species into the claimed inventions.		

With Kenyan distribution

Species name: *Gerbera aberdarica*	Kingdom: Plantae	
Brief description of species: Synonym of *Gerbera piloselloides*. Widely distributed across Africa and Asia. Popular in horticulture, many cultivars.		
Distribution: Cosmopolitan	No of documents: 2	
EP2011388A1 US2009083875A1		
Detail: Patents claim a Gerbera L. plant with particular characteristics that is selected from a large number of possible Gerbera species including Gerbera aberadica.		

With Kenyan distribution

Species name: *Halorubrum vacuolatum*	Kingdom: Archaea	No Image Available
Brief description of species: Also known as *Natronobacterium vacuolatum*.		
Distribution: Cosmopolitan	No of documents: 1	
US6337208B1		
Detail: Patent focuses on E. coli cloning vector containing a lethal polypeptide from this species obtained from Genbank. One of a number of possible polypeptides referenced in claims and obtained from Genbank. Two other documents include the species in long lists of thermophilic Archaebacteria for enzymes with reverse transcriptase and DNA polymerase activity (US2003228616A1, WO2004039947A2). WO2005118866A2 relates to DNA polymerase enzymes useful in labeling nucleic acids. The patent application, includes the species in a long list of thermophilic archaebacteria.		

With Kenyan distribution

Species name: *Impatiens uguenensis*	Kingdom: Plantae	
Brief description of species: (Impatiens sodenii). Of horticultural interest. This plant is distributed through Tanzania, Kenya, Mexico and Costa Rica.		
Distribution: Cosmopolitan	No of documents: 4	
US5986188A US6924416B2 US2002138883A1 WO2001047349A1		
Detail: Patents refer to novel trailing impatiens plants and seed with I. uguenensis referenced in an historic example with literature reference. US5986188A refers to a novel colour from I. walleriana where I. ugenensis is one among other suitable targets for producing plants of this colour.		

With Kenyan distribution

Species name: *Monadenium rhizophorum (Euphorbia rhizophora)*	Kingdom: Plantae	
Brief description of species: (Euphorbia rhizophora). Endemic to Kenya.		
Distribution: Endemic	No of documents: 2	
US4204859A US4322242A		
Detail: States that the method claimed in the patent could be used to increase hydrocarbon accumulation in this species and other Euphorbia.		

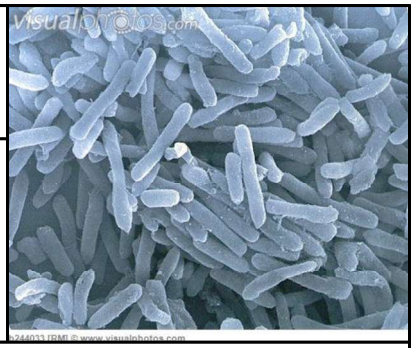
With Kenyan distribution

Species name: *Moringa arborea*	Kingdom: Plantae	
Brief description of species: IUCN Red List: vulnerable. Plants from this genus are used as a food supplement, though it is possible that a similar Asian species is the plant used in the patents.		
Distribution: Cosmopolitan	No of documents: 3	
US2006222682A1 US2009098230A1 WO2010008306A2		
Detail: WO2010008306A2 involves a nutritional beverage from the Moringa genus that incorporates M. arborea claimed on the genus level. US2006222682A1 & US2009098230A1 concerns a nutraceutical Moringa composition focusing on a method involving processing portions of the Moringa plant and combining the elements.		

Of Kenyan origin

Species name: *Moringa stenopetala*	Kingdom: Plantae	
Brief description of species: A tree used for food and companion planting. Moringa stenopetala, commonly called cabbage-tree, is native to Kenya and, historically, Ethiopia. The species is believed to be extinct in the wild in Ethiopia.		
Distribution: Endemic	No of documents: 1	
US2007264366A1		
Detail: Patent application focuses on a Moringa crude extract with anti-fungal properties.		

With Kenyan distribution

Species name: *Natronobacterium magadii* *Natrialba magadii*	Kingdom: Archaea	
Brief description of species: Etymology: Named for Lake Magadi, a saline soda lake in Kenya where it was discovered in 1984. A new genus with 3 species. Pharmaceuticals, lipid extracts used in vaccines.		
Distribution: Endemic	No of documents: 14	
EP1223978B1 EP1223978B9 US5989587A US6962989B1 US2007042474A1 US2007059744A1 US2007099213A1 US2008305524A1 US2009029356A1 WO1993008202A1 WO1993009219A1 WO2001026683A2 WO2006128678A1 WO2010129940A2		
Detail: EP1223978B1, EP1223978B9 claim the use of Natronobacterium magadii and other organisms in a liposome for use against cancer and intracellular pathogens. US5989587A claims a liposome vesicle with a bilayer membrane consisting of the total polar lipid extract of Natronobacterium magadii. WO2006128678A1, US20080305524A1 refers to adhesive as molecular glue from the flagella of archaea including sequence data for N. magadii. WO2005118866A2 includes the species in a long list of species of thermophilic archaea for reverse transcriptase activity. US6962989B1, US20070042474A1, US2007059744A1, US20070099213A, US2009029356A1 for Corynebacterium genes encoding novel proteins where the species appears in a very long list of novel bacteria with molecules that can be produced in C. glutamicum. US5989587A, WO1993008202A1 are concerned with the formation of stable liposomes from lipid extracts or archaea. WO1993009219A1 by Genencor for Haloalkaliphilic microorganisms refers to Natronobacterium magadii as one of the only known haloalkaliphilic bacteria and directly refers to collection in African Rift Valley hypersaline lakes. The case was subsequently highlighted by civil society groups. WO2001026683A2 refers to archaeosomes as immunomodulating carriers for acellular vaccines. WO2010129940A2 refers to Archaeal laccases and multicopper oxidases refers to literature on *N. magadii* for the purpose of comparison only.		

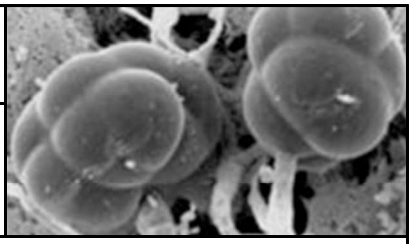
With Kenyan distribution

Species name: *Natronococcus occultus*	Kingdom: Archaea	No Image Available
Brief description of species: From Lake Magadi, a saline soda lake in Kenya where it was discovered.		
Distribution: Endemic	No of documents: 4	
US2003228616A1 US2005123940A1 WO2004039947A2 WO2005118866A2		
Detail: US2003228616A1, WO2004039947A2 for reverse transcription polymerases (enzymes), the species is included in a long list of extremely thermophilic archaebacteria species that includes Natrialba magadii above. US2005123940A1, WO2005118866A2 relate to compositions and methods for synthesizing cDNA and refer to the species in a long list of extremely thermophilic species.		

With Kenyan distribution

Species name: *Oreochromis spilurus*	Kingdom: Animalia	
Brief description of species: Africa: Athi River and its tributaries above Lugard's Falls & upper tributaries of the Tana River in Kenya. Also known from Ethiopia.		
Distribution: Cosmopolitan	No of documents: 1	
WO2009080864A1		
Detail: WO2009080864A1 for a method for the production of fish progeny lists the species as part of a long list that the claimed method can be applied to with the aim of reducing genetic variation in the fish progeny. The patent specifically references *Oreochromis* as a target outcome of the invention and claims the progeny arising from the method.		

Of Kenyan origin

Species name: *Pochonia chlamydosporia*	Kingdom: Fungi	
Brief description of species: Used as a pesticide. Strain from Kenya used to trial chitosan as pesticide additive.		
Distribution: Cosmopolitan	No of documents: 1	
Detail: EP2113559A1 refers to a method for increasing sporulation in fungus using chitosan involving selecting the fungus, inoculating the culture medium and incubating. The patent refers to a study of sporulation in a number of *P. chlamydosporia* including P.c.BK132 from Kenya. The focus therefore is on the effect of chitosan on sporulation in this species of fungi.		

With Kenyan distribution

Species name: *Senecio keniodendron*	Kingdom: Plantae	
Brief description of species: S keniodendron is endemic to valley slopes and ridges on Mt Kenya. 0 degrees latitude at altitudes of 3,700 metres (12,100 ft) and 4,500 metres (14,800 ft). Described in patent as a plant representative of the flora in the area.		
Distribution: Endemic	No of documents: 4	
US6485950B1 US7037697B2 US2003064494A1 US2006008539A1		
Detail: US6485950B1, US7037697B2 refer to purified isozyme of an autoclavable superoxide dismutase (SOD) from high altitude plants notably *Potentilla astrisanguinea* from Kunzum pass in the Himalayas, directed to cosmetics, pharmaceutical and food compositions. *S. kenidendron* is mentioned in a list of other high altitude species that could be suitable for extracting the enzyme. US2006008539A1 refers to a technology for suppressing the proliferation of microorganisms and/or suppressing their proliferation. Senecio and the species are mentioned as extracts for use in the claimed invention.		

Of Kenyan origin

Species name: *Sesamum indicum*	Kingdom: Plantae	
Brief description of species: Sesame is a flowering plant in the genus Sesamum. Numerous wild relatives occur in Africa and a smaller number in India. It is widely naturalised in tropical regions around the world and is cultivated for its edible seeds.		
Distribution: Cosmopolitan	No of documents: 1	
Detail: US2006230472A1 focuses on a novel seed of sesame variety S29, deposited with ATCC accession number PTA-6598, and a plant and pollen or tissue culture produced from the seed. The patent applicant refers to the collection of commercial samples from over 30 countries including Kenya and a number of other African countries. As such the invention is an outcome of samples from multiple countries. This reflects wider patterns with agricultural R&D.		

With Kenyan distribution

Species name: *Sesbania punctata*	Kingdom: Plantae	
Brief description of species: (Sesbania sesban) Small leguminous tree/shrub. Origin unknown but cultivated for animal feed and green manure widespread across many sub-Saharan African countries.		
Distribution: Cosmopolitan	No of documents: 2	
EP2183967A1 US2010116898A1		
Detail: US2010116898A1, EP2183967A1 Plant transfer elements including genus *Sesbania* for fragrances, insecticides, pharmaceuticals. Species appears in list for the genus. The two applications are from the same patent family.		

Of Kenyan origin

Species name: *Streptosporangium carneum*	Kingdom: Bacteria	
Brief description of species: New species of bacteria isolated from soil sample collected from Tana River, Kenya for use as an antibiotic.		
Distribution: Endemic	No of documents: 2	
US5286648A EP0424051A1		
Detail: EP0424051A1 refers to a lipo:glycopeptide antibiotic A84575 complex produced by submerged aerobic fermentation of streptosporangeum to treat and prevent Gram positive bacterial infections. The Lilly & Co applicants state that "Culture A84575 was isolated from a soil sample collected by the Tana River in Nairobi, Kenya, Africa." US5286648A is for a new Streptosporangeum carneum culture to produce antibiotic A84575 to treat bacterial infections in mammals. The applicants give the same statement on origin as for the EP application. The focus of the invention is S. carneum and mutants to produce the A84575 compounds. EP0424051A1 has a significant patent family but began to lapse from 2010 onwards.		

Of Kenyan origin

Species name: *Trypanosoma brucei*	Kingdom: Protista	
Brief description of species: Trypanosoma brucei is a protozoan with flagella species that causes African trypanosomiasis in humans and nagana in animals in Africa.		
Distribution: Cosmopolitan	No of documents: 1	
EP1048728A1		
Detail: The application claims a new trypanosome culture derived faction that inhibits growth or induces cell death in trypanosomes that is useful for treating humans or livestock at risk from trypanosomosis. The applicants state that "*Trypanosoma brucei* in the present invention is *Trypanosoma brucei brucei* ILTat1.1 (Miller FN and Turner MJ (1981), Parasitology Vol 82, pp 63-80) which is a cloned derivative of EATRO (East African Trypanosomiasis Research Organisation) 795 which was isolated form a cow in Uhembo, Kenya"		

Of Kenyan origin

Species name: *Vernonia galamensis*	Kingdom: Plantae	
Brief description of species: Plant is the source of vernonia oil which is used to make plastics. It also has medicinal properties.		
Distribution: Cosmopolitan	No of documents: 1	
US2007202207A1		
Detail: The application focuses on an expoxidised compound (vernonia oil or vernonia acid) obtained by extraction from Vernonia galamensis seed for the treatment of a lesion on the skin of a mammal. The applicants states that: "*V. galamensis* (sometimes referred as *V. pauciflora*) is an annual plant ranging in plant height from 0.2 m to 5.0 m depending on the subspecies and the geographic location. Two centers of diversity are Kenya and northern Tanzania with only one botanical variety occurring outside eastern Africa. *V. galamensis* differs from other annual species of *Vernonia* in leaf form, and/or pappus, and involucre form and size. The seed head (capitula) contains hermaphroditic, protandrous florets." The patent application has a significant and active patent family.		

Of Kenyan origin

Species name: *Zanthoxylum gilletii*	Kingdom: Plantae	
Brief description of species: A forest tree growing naturally and planted in Western Kenya for its timber and medicinal properties. Native to Angola, Democratic Republic of Congo, Kenya, Nigeria, Sudan, Tanzania, Uganda, Zambia, Zimbabwe.		
Distribution: Cosmopolitan	No of documents: 1	
WO2004062679A		
Detail: Use of an aqueous extract of plants from the genus for treating AIDs and viral diseases. The individual applicant is from Kenya. "The applicant states that Zanthoxylum gilletii is a tree growing in Kenya, which originates from the tropical forest. Zanthoxylum species are generally characterized by a large content of alkaloids, which can be either tertiary or quaternary alkaloids". Furthermore, "The aqueous solution of Zanthoxylum gilletii prepared in Example 1 was used for a clinical study practiced on 20 patients from a local hospital in Kenya during the year 2001-2002. These patients in poor to very poor clinical state were confirmed HIV/AIDS positive while they were displaying low levels of CD4 cells (< 500 CD4 cells/ml) in their blood."		

Other Species of Relevance to Kenya in Patent Documents

This section includes species that are not a direct focus of an invention or where a species is exclusively referenced in a long list of organisms as potential targets of the invention. The section is included for the sake of completeness.

With Kenyan distribution

Species name: *Afrocaecilia taitana*	Kingdom: Animalia	
Brief description of species: Synonym of Boulengerula taitana, it is a species of caecilian. Amphibian endemic to southeast Kenya.		
Distribution: Endemic	No of documents: 2	
EP1391503A1 WO2004016772A1		
Detail: Patent applications focus on a method of reprogramming somatic cells (stem cells). Species appears as part of a long list of amphibians where the method could be applied.		

With Kenyan distribution

Species name: *Amblyomma herbraeum*	Kingdom: Animalia	
Brief description of species: Tick of livestock. Patents concerned with veterinary medicine, specifically the control of animal ectoparasites.		
Distribution: Cosmopolitan	No of documents: 3	
US2008306095A1 US2010179206A1 WO2008154466A2		
Detail: This species appears purely in lists of ectoparasites that a pesticide compound can be applied to.		

With Kenyan distribution

Species name: *Beatragus hunteri*	Kingdom: Animalia	
Brief description of species: The hirola (Beatragus hunteri, sometimes Damaliscus hunteri), also known as Hunter's hartebeest, is an antelope species found in arid grassy plains in a pocket on the border between Kenya and Somalia. It is the only member of the genus Beatragus.		
Distribution: Cosmopolitan	No of documents: 1	
US7141364B1		
Detail: Included in *in silico* study for identification of universal primers to amplify cytochrome b gene of any animal. The primers are the focus of the invention for the identification of wildlife		

With Kenyan distribution

Species name: *Dothiorella aromatica*	Kingdom: Fungi	No Image Available
Brief description of species: Root pathogen.		
Distribution: Cosmopolitan	No of documents: 1	
WO2004035131A2		
Detail: This species is a target of an invention involving a protective cover impregnated with insecticide to protect crops. However, the patent application does not involve genetic resources.		

With Kenyan Distribution

Species name: *Glossina brevipalpis*	Kingdom: Animalia	
Brief description of species: Tstetse fly. References in long lists of targets for insecticides. In a small number of cases patents mention *Wigglesworthia glossinidia* endosymbiont of this species.		
Distribution: Cosmopolitan	No of documents: 13	
US2007039069A1 US2007178505A1 US2009081746A1 US2009111154A1 US2010209986A1 WO1994009630A1 WO1995002695A1 WO1996001563A1 WO2005049642A2 WO2007072214A2 WO2007079428A2 WO2008098227A2 WO2008124523A1		
Detail:US2007178505A1 focuses on vectors, expression cassettes and libraries, where the promoter library may be from the endosymbiont of the species.US2009081746A1, US2009111154A1, US2010209986A1 on metabolically modified microorganisms for producing biofuels makes reference to the endosymbiont as a potential source of Phosphate acetyltransferase (PTA).WO1994009630A1, WO1995002695A1 include a potentiated Bacillus for a pesticide that could target this species among others. WO1995022253A1 is for biopesticides that could target this species.		

With Kenyan Distribution

Species name: *Glossina fuscipes*	Kingdom: Animalia	
Brief description of species: Species of tsetse fly. Very widely distributed across much of Africa. It carries trypanosomes (the disease agents causing human sleeping sickness and animal trypanosomosis).		
Distribution: Cosmopolitan	No of documents: 202	

EP1367898B1 EP1691607B1 EP1841317B1 EP1893020B1 EP1915344B1 EP1937072B1 EP2067787A1 EP2069306B1 US5859235A US5912162A US5955367A US5976563A US5976564A US5994266A US6268181B1 US6270760B1 US6277624B1 US6280720B1 US6280721B1 US6303382B1 US6406691B1 US6844182B2 US7364728B2 US7674827B2 US7754749B2 US2002004237A1 US2003064060A1 US2005244394A1 US2005271642A1 US2007117868A1 US2007184983A1 US2007259962A1 US2008176826A1 US2008194641A1 US2008200528A1 US2008227635A1 US2008221168A1 US2008249182A1 US2008261812A1 US2008293569A1 US2008300313A1 US2009029855A1 US2008312295A1 US2009075819A1 US2009131256A1 US2009136551A1 US2010041552A1 US2010041682A1 US2010041700A1 US2010056469A1 US2010064578A1 US2010069244A1 US2010081698A1 US2010093532A1 US2010093715A1 US2010105752A1 US2010120616A1 US2010137375A1 US2010167925A1 US2010167927A1 US2010204045A1 US2010215777A1 US2010234457A1 US2010292323A1 US2010298138A1 WO1994002591A1 WO1995022253A1 WO1995025181A1 WO1996018302A1 WO1996028031A1 WO1997015187A1 WO1997027305A1 WO2002065835A2 WO2005053402A2 WO2005053403A2 WO2006002984A1 WO2006045522A1 WO2006125637A1 WO2006125641A2 WO2006128863A1 WO2006128867A1 WO2006128870A2 WO2007014913A1 WO2007017414A1 WO2007017501A2 WO2007017502A2 WO2007017518A2 WO2007051756A1 WO2007054558A2 WO2007060120A1 WO2007071585A1 WO2007071609A1 WO2007077246A2 WO2007082841A2 WO2007085565A1 WO2007100165A1 WO2007104726A1 WO2007110435A2 WO2007118896A1 WO2007122163A2 WO2007135029A1 WO2007147701A1 WO2007147888A1 WO2008000834A1 WO2008017649A1 WO2008031712A2 WO2008031824A1 WO2008031870A2 WO2008034785A2 WO2008034787A2 WO2008040727A2 WO2008052913A1 WO2008055882A1 WO2008055883A1 WO2008055881A1 WO2008055882A1 WO2008055883A1 WO2008055884A1 WO2008065145A1 WO2008090048A2 WO2008074686A1 WO2008092818A2 WO2008092851A2 WO2008095794A2 WO2008095870A2 WO2008095913A2 WO2008104503A1 WO2008125410A2 WO2008129060A2 WO2008145615A2 WO2009004032A1 WO2009007233A2 WO2009019299A2 WO2009021985A2 WO2009021986A1 WO2009027393A2 WO2009062905A1 WO2009071672A1 WO2009080546A1 WO2009098210A2 WO2009098225A2 WO2009098227A2 WO2009098228A2 WO2009098230A2 WO2009098300A2 WO2009115491A1 WO2009118297A2 WO2009153238A1 WO2009153285A2 WO2009156336A1 WO2010000791A1 WO2010003877A1 WO2010003923A1 WO2010007060A1 WO2010023171A2 WO2010026218A1 WO2010029069A1 WO2010034737A1 WO2010034738A2 WO2010043552A1 WO2010043553A1 WO2010043639A2 WO2010046378A2 WO2010046382A2 WO2010046421A1 WO2010046427A1WO2010046463A1 WO2010070035A1 WO2010072602A1 WO2010072781A2 WO2010092014A2 WO2010092028A2 WO2010092031A2 WO2010092032A1 WO2010100189A1 WO2010112545A1

Detail: This species is regularly referenced in patents for biocides/pesticides. Typically, the species appears as part of long lists. As such, the species is one among other organisms that could be targeted by the claimed biocide/pesticide. It is included here to highlight that patent activity is directed in part to this problem species.

Of Kenyan origin

Species name: *Glossina mortisans*	Kingdom: Animalia	
Brief description of species: Tsetse fly found in Africa and the Arabian Peninsula beneath the Tropic of Cancer Vector for *Trypanosoma brucei brucei* strains acquired from Kenya isolated in in the 1960s and 1980s among other locations. The invention focuses on producing a nucleic acid fingerprint to create DNA markers.		
Distribution: Cosmopolitan	No of documents: 1	
US2005208513A1		
Deatil: US2005208513A1 The claimed invention focuses on producing a nucleic acid fingerprint to create DNA markers. The applications references T. brucei isolates from a range of countries including four isolates from Kenya.		

With Kenyan distribution

Species name: *Justicia regis*	Kingdom: Plantae	
Brief description of species: New species of genus first recorded in 2008. 2nd patent refers to a new cultivar first grown in California.		
Distribution: Endemic	No of documents: 2	
US2010151000A1 USPP43885A		
Detail: Appears in literature reference in US2010151000A1 for methods for modulating immune responses. USPP43885A from 1979 refers to a new and distinct walnut tree grown from a seed of the California walnut breeding program in 1964. The original source of the seed is not specified.		

With Kenyan distribution

Species name: *Leptosphaeria bicolor*	Kingdom: Fungi	No Image Available
Brief description of species: New species of pathogen that causes leaf rot in sugar cane.		
Distribution: Endemic	No of documents: 1	
WO2006034811A2 (See DE102004047409A1 for full text)		
Detail: Appears in list of species in German language version. Species appears in long list of species. Focus is laccase gene from Aspergillus as a reporter. Relevance to species is unclear.		

With Kenyan distribution

Species name: *Ustilago hitchcockiana*	Kingdom: Fungi	
Brief description of species: *Ustilago* is a genus of approximately 200 smut fungi parasitic on grasses and maize. This species is distributed throughout Kenya and Tanzania.		
Distribution: Cosmopolitan	No of documents: 6	
US2008139389A1 US2010035753A1 US2010197741A1 US2010209410A1 WO2009060012A2 WO2009040397A1		
Detail: US2008139389A1 is for fungicidaly active carboxamides for seed treatment for controlling a large number of fungi including this species. US2010035753A1 is for a fungicidal mixture that could target this species. US2010197741A1, WO2009040397A1 are for ternary fungicidal compositions that could target this species. US2010209410A1, WO2009060012A2 are for a fungicidal composition involving a strain of Bacillus subtilis that could target this and other species.		

With Kenyan distribution

Species name: *Papio cynocephalus*	Kingdom: Animalia	
Brief description of species: The yellow baboon. Distributed across several sub-Saharan African countries.		
Distribution: Cosmopolitan	No of documents: 2	
US5639625A WO1996010180A1		
Detail: The applications refer to a method for detecting antibodies to thrombomodulin in patients. The applications make reference only to the species in connection with a scientific study indicating that the Protein C pathway is critical in modulating inflammatory and coagulopathic responses in vivo.		

With Kenyan distribution

Species name: *Phaeoramularia angolensis*	Kingdom: Fungi	
Brief description of species: Citrus fruit pathogen. Also known to exist in Mozambique & Angola.		
Distribution: Cosmopolitan	No of documents: 1	
WO2009136293A2		
Detail: WO2009136293A2. The species appears in a patent application on genes and methods for increasing disease resistance in plants. The patent simply references the species as a known plant pathogen in citrus plants.		

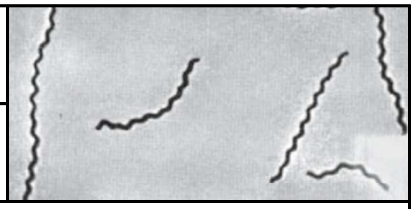
With Kenyan distribution

Species name: *Phlebotomus duboscqi*	Kingdom: Animalia	
Brief description of species: Sand fly vector of leishmaniasis.		
Distribution: Endemic	No of documents: 9	
WO2007093295A2 WO2007093296A2 WO2007093298A1 WO2007093297A2 WO2010021940A1 WO2010078466A2 WO2010078469A2 WO2009037242A2 WO2008095890A2.		
Detail: WO2010021940A1 focuses on a method of priming or enhancing immune response to a disease antigen using an adjuvant from a sand fly salivary gland polypeptide to induce a T cell response in the individual. Other patent applications refer to the species in long lists of species that could be the target for the claimed invention.		

With Kenyan distribution

Species name: *Sphodromantis centralis*	Kingdom: Animalae	
Brief description of species: Central African praying mantis.		
Distribution: Cosmopolitan	No of documents: 2	
US2006247197A1 US2010311819A1		
Detail: US2006247197A1, US2010311819A1 target methods for controlling fungal growth using RNA interference for down regulating gene expression in fungi. A short sequence from the species appears in a table of examples. However, the species is not the focus of the invention and the sequence does not appear in the claims.		

With Kenya Distribution

Species name: *Spirochaeta africana*	Kingdom: Bacteria	
Brief description of species: Bacteria found in alkaline lakes.		
Distribution: Cosmopolitan	No of documents: 2	
US6165770A WO1998013481A1		
Detail: US6165770A focuses on a cloned DNA sequence or DNA construct for an Alkaline stable amylase from Thermoalcalibacter. The species appears in a literature reference only. WO1998013481A1 Literature reference in an application for an enzyme with cyclomaltodextron glucanotransferase activity.		

With Kenyan distribution

<table>
<tr><td>Species name:
Thermosyntropha lipolytica</td><td>Kingdom: Bacteria</td><td rowspan="2">No Image Available</td></tr>
<tr><td colspan="2">Brief description of species:
Thermosyntropha lipolytica is an anaerobic, thermophilic, or ganotrophic, lipolytic, alkali-tolerant, Gram-positive-type bacterium isolated from an alkaline hot spring of Lake Bogoria, Kenya.</td></tr>
<tr><td colspan="2">Distribution: Endemic</td><td>No of documents: 2</td></tr>
<tr><td colspan="3">WO2009088760A1 US2008182318A1</td></tr>
<tr><td colspan="3">Detail: US2008182318A1, WO2009088760A1 refers to consortia of bacteria including this species for biogenic methane production. The species may form part of Clostridia consortiums while the patent claims focuses on Desulfuromonas. As such in our view T. lipolytica is not the focus of, or integral to, the claimed invention.</td></tr>
</table>

Appendix 1.
Distribution map of GBIF records in Kenya coloured by taxonomic kingdom.