LAPaL
THE LONG-ACTING THERAPEUTICS PATENTS AND LICENCES DATABASE

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Long-Acting Injectable Solid Drug Nanoparticle (SDN) Platform

Verified by the innovator, on Apr 2022

Developer(s)

Tandem Nano Ltd.

https://www.tandemnano.com/

United Kingdom

A University of Liverpool based start-up company using proprietary technology for the generation of novel nanoparticle formulations to improve the delivery of poorly water soluble APIs.

Sponsor(s)

Unitaid

https://unitaid.org

Partnerships

No partner indicated

Technology information

Type of technology

Aqueous drug particle suspension

Administration route

To be determined

Development state and regulatory approval

Active Pharmaceutical Ingredient (API)

Anti-infectives for systemic use, Glecaprevir and pibrentasvir (G/P), Rifapentine

Development Stage

Pre-clinical

Regulatory Approval

Not provided

Description

The use of particle processing technology to generate long-acting injectable nanoparticle formulations for long-acting delivery.

Technology highlight

The generation of high drug-loading nanoparticles with prolonged release for poorly water-soluble drugs with the potential for co-formulation strategies.

Technology main components

Active pharmaceutical ingredients, FDA/CDER listed excipients.

Delivery device(s)

No delivery device

APIs compatibility profile

API desired features

Water-insoluble molecules

Unit: mg/mL

To be determined.

Small molecules

Multiple.

Additional solubility data

None.

Additional stability data

-

API loading: Maximum drug quantity to be loaded

75-90 wt%

API co-administration

2 different APIs : API dependent.

LogP

Not provided

Scale-up and manufacturing prospects

Scale-up prospects

To be determined

Tentative equipment list for manufacturing

To be determined

Manufacturing

To be determined

Specific analytical instrument required for characterization of formulation

To be determined

Clinical trials

Not provided

Excipients

Proprietary excipients used

No proprietary excipient used

Novel excipients or existing excipients at a concentration above Inactive Ingredients Database (IID) for the specified route of administration

No novel excipient or existing excipient used

Residual solvents used

No residual solvent used

Additional features

Other features of the technology

Not provided

Release properties

To be determined

Injectability

To be determined

Safety

To be determined

Stability

To be determined

Storage conditions and cold-chain related features

To be determined

Potential application(s)

Therapeutic area(s)

Disease agnostic

Use case(s)

Not provided

Use of technology

Ease of administration

- To be determined

Frequency of administration

Not provided

User acceptance

Not provided

Targeted user groups

Age Cohort

- Adults

Genders

- All
- Male
- Female
- Cisgender female
- Cisgender male
- Transgender female
- Transgender male
- Intersex
- Gender non-binary

Pregnant individuals

Unspecified

Lactating individuals

Unspecified

Healthy individuals

Unspecified

Comment

Not provided

Potential associated API(s)

Anti-infectives for systemic use, Glecaprevir and pibrentasvir (G/P), Rifapentine

Class(es)

Not provided

Development stage

Pre-clinical

Clinical trial number(s)

Not provided

Foreseen/approved indication(s)

Not provided

Foreseen user group

Not provided

Foreseen duration between application(s)

Not provided

Applications to Stringent Regulatory Authorities (SRA) / regulatory approvals

Not provided

Antiparasitic products, Atovaquone

Class(es)

Not provided

Development stage

Pre-clinical

Clinical trial number(s)

Not provided

Foreseen/approved indication(s)

Not provided

Foreseen user group

Not provided

Foreseen duration between application(s)

Not provided

Applications to Stringent Regulatory Authorities (SRA) / regulatory approvals

Not provided

Patent info

Technology patent families

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Solid composition comprising dispersed atovaquone nanoparticles Expiry date: 2037-06-15 A solid composition comprising nanoparticles of atovaquone dispersed within one or more carrier materials, wherein the atovaquone is present in an amount of at least 10 wt%. Also described is an intramuscularly- or subcutaneously-injectable formulation of nanoparticles of atovaquone	WO2017216564	Composition	The Johns Hopkins University, The University of Liverpool	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	China, India, Sierra Leone, Eswatini, Liberia, Namibia, Sao Tome and Principe, Mozambique, Zambia, Zimbabwe, Tanzania, United Republic of, Malawi, Ghana, Rwanda, Sudan, Botswana, Lesotho, Kenya, Gambia (the)	Australia, Canada
Filed	Albania, Serbia, Türkiye, North Macedonia, South Africa, Brazil	Liechtenstein, Italy, Norway, Malta, Denmark, Belgium, United Kingdom, Greece, Netherlands, Hungary, Croatia, Switzerland, Spain, San Marino, Slovenia, Austria, Romania, Iceland, Cyprus, Finland, France, Bulgaria, Slovakia, Poland, Latvia, Ireland, Estonia, Germany, Luxembourg, Portugal, Czechia, Lithuania, Monaco, Sweden, Japan, United States of America

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	World Intellectual Property Organization (WIPO), Morocco, Bosnia and Herzegovina, Montenegro, Moldova, Republic of, Uganda	World Intellectual Property Organization (WIPO), Chile, United States of America

MPP Licence(s)

Patent and know-how licence on long-acting formulations using Tandem Nano's emulsion-templated freeze-drying technology (ETFD)

https://medicinespatentpool.org/licence-post/long-acting-technologies-for-hcv-tb-and-malaria-treatment

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Carrier liquids and methods of producing such liquids Expiry date: 2032-08-20 The invention provides a method for the preparation of a carrier liquid which comprises the steps of: (I) preparing a single phase solution comprising: (a) a solvent or a mixture of miscible solvents, (b) a liquid carrier material, which is soluble in solvent (a), and (c) a dopant material which is also soluble in solvent (a); (II) cooling (preferably freezing) the single phase solution produced in step (I) to a temperature at which at least both the solvent (a) and carrier material (b) become solid; and (III) removing solid solvent (a) from the cooled (frozen) single phase solution in vapour form, such that the remaining cooled (frozen) carrier material (b) and dopant material (c) are returned to ambient temperature thus providing a product of liquid carrier material (b) having dopant material (c) dispersed therein.	WO2013030535	Process	IOTA NANOSOLUTIONS LIMITED	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	India	United Kingdom, Hungary, France, Ireland, Germany, United States of America
Filed		

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	World Intellectual Property Organization (WIPO), Albania, Serbia, Bosnia and Herzegovina, Montenegro, Türkiye, North Macedonia	World Intellectual Property Organization (WIPO), Liechtenstein, Italy, Norway, Malta, Denmark, Belgium, United Kingdom, Greece, Netherlands, Croatia, Switzerland, Spain, San Marino, Slovenia, Austria, Romania, Iceland, Cyprus, Finland, Bulgaria, Slovakia, Poland, Latvia, Estonia, Luxembourg, Portugal, Czechia, Lithuania, Monaco, Sweden

MPP Licence(s)

Patent and know-how licence on long-acting formulations using Tandem Nano's emulsion-templated freeze-drying technology (ETFD)

https://medicinespatentpool.org/licence-post/long-acting-technologies-for-hcv-tb-and-malaria-treatment

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Nanodispersions of anti-viral drugs Expiry date: 2031-04-08 The invention provides a composition and an antiviral drug preparation, each comprising at least one water-insoluble antiviral drug and at least one water-soluble carrier material, wherein the water-insoluble antiviral drug is dispersed through the water-soluble carrier material in nano-disperse form. The present invention further provides processes for preparing the compositions and drug preparations, and also aqueous nano-dispersions obtained by combining water and the compositions.	WO2011128623	Composition, Process	Duncalf, David John, Foster, Alison Jayne, Iota Nanosolutions Limited, Long, James, Rannard, Steven Paul, Wang, Dong	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	India	Liechtenstein, Belgium, United Kingdom, Switzerland, Cyprus, France, Ireland, Germany, Luxembourg, Monaco, Israel, United States of America
Filed		
Not in force	World Intellectual Property Organization (WIPO), China, Albania, Serbia, Bosnia and Herzegovina, Montenegro, Türkiye, North Macedonia	World Intellectual Property Organization (WIPO), Canada, Italy, Norway, Malta, Denmark, United Kingdom, Greece, Netherlands, Hungary, Croatia, Spain, San Marino, Slovenia, Austria, Romania, Iceland, Finland, Bulgaria, Slovakia, Poland, Latvia, Estonia, Portugal, Czechia, Lithuania, Sweden, Japan

MPP Licence(s)

Patent and know-how licence on long-acting formulations using Tandem Nano's emulsion-templated freeze-drying technology (ETFD)

https://medicinespatentpool.org/licence-post/long-acting-technologies-for-hcv-tb-and-malaria-treatment

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Anti-parasitic nano-dispersed compositions Expiry date: 2027-06-29 The present invention relates to nanodisperse antiparasitcs and provides a composition comprising at least one water insoluble anti-parasitic drug and a water-soluble carrier material, wherein the water-insoluble anti-parasitic drug (preferably an Artemisinin-type drug or a quinine type drug) is dispersed through the carrier material in nano-disperse form having a peak diameter of the nano-disperse form below 1000nm	WO2008006713	Composition	Duncalf, David, John, Essa, Asha, Hassan, Foster, Alison, Jayne, Long, James, Rannard, Steven, Paul, Unilever N.V, Unilever Plc, Wang, Dong	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	South Africa, Congo, Mauritania, Guinea-Bissau, Niger, Senegal, Cameroon, Mali, Togo, Burkina Faso, Benin, Côte d'Ivoire, Central African Republic, Guinea, Gabon, Equatorial Guinea, Chad	Canada, Liechtenstein, Italy, Belgium, United Kingdom, Netherlands, Hungary, Croatia, Switzerland, Spain, Austria, France, Ireland, Germany, Sweden, United States of America
Filed		

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	World Intellectual Property Organization (WIPO), Argentina, Brazil, China, Albania, Serbia, Bosnia and Herzegovina, Türkiye, North Macedonia, Mexico, South Africa, India, Sierra Leone, Eswatini, Namibia, Mozambique, Uganda, Zambia, Zimbabwe, Tanzania, United Republic of, Malawi, Ghana, Sudan, Botswana, Lesotho, Kenya, Gambia (the), Indonesia	World Intellectual Property Organization (WIPO), Australia, Canada, Chile, Liechtenstein, Italy, Malta, Denmark, Belgium, United Kingdom, Greece, Netherlands, Hungary, Croatia, Switzerland, Spain, Slovenia, Austria, Romania, Iceland, Cyprus, Finland, France, Bulgaria, Slovakia, Poland, Latvia, Ireland, Estonia, Germany, Luxembourg, Portugal, Czechia, Lithuania, Monaco, Sweden, Japan, United States of America, Israel

MPP Licence(s)

Patent and know-how licence on long-acting formulations using Tandem Nano's emulsion-templated freeze-drying technology (ETFD)

https://medicinespatentpool.org/licence-post/long-acting-technologies-for-hcv-tb-and-malaria-treatment

Glecaprevir/Pibrentasvir (LAI candidate)

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Pibrentasvir compound II Expiry date: 2032-02-24 Compounds effective in inhibiting replication of Hepatitis C virus ("HCV") are described. This invention also relates to processes of making such compounds, compositions comprising such compounds, and methods of using such compounds to treat HCV infection.	WO2012116257	Compound	Abbvie Inc	No	UNITAID 2017 patent landscape

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	China, Mexico	Taiwan, Province of China, Spain, Germany, France, United Kingdom, Italy
Filed		Spain
Not in force	World Intellectual Property Organization (WIPO), Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia	Canada, Japan, United States of America, World Intellectual Property Organization (WIPO), Belgium, Luxembourg, Netherlands, Switzerland, Sweden, Austria, Liechtenstein, Greece, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir compound Expiry date: 2031-09-20 The present invention discloses compounds of Formula (I) or pharmaceutically acceptable salts, esters, or prodrugs thereof: Formula (I) which inhibit serine protease activity, particularly the activity of hepatitis C virus (HCV) NS3-NS4A protease. Consequently, the compounds of the present invention interfere with the life cycle of the hepatitis C virus and are also useful as antiviral agents. The present invention further relates to pharmaceutical compositions comprising the aforementioned compounds for administration to a subject suffering from HCV infection. The invention also relates to methods of treating an HCV infection in a subject by administering a pharmaceutical composition comprising the compounds of the present invention.	WO2012040167	Compound	Enanta Pharmaceuticals, Inc	Yes	UNITAID 2017 patent landscape, MPP Licence, Health Canada, US FDA

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income

Granted	Argentina, Brazil, China, Colombia, Costa Rica, Dominican Republic, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Moldova, Republic of, Ecuador, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Guatemala, Mexico, Peru, South Africa, India, Bolivia (Plurinational State of), Mongolia, Philippines, Malaysia, Pakistan, Indonesia, Ukraine	Canada, Australia, Cyprus, Denmark, Spain, Hong Kong, Croatia, Israel, Japan, Korea, Republic of, New Zealand, Portugal, Singapore, Slovenia, San Marino, United States of America, Chile, Russian Federation, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, Romania, Latvia, Lithuania, Uruguay, Panama, Bahrain, Kuwait, Qatar, Saudi Arabia, Oman, United Arab Emirates, Macao
Filed	Argentina, Paraguay, Viet Nam, Venezuela (Bolivarian Republic of), Thailand	Cyprus, Denmark, Spain, Croatia, Portugal, Slovenia, San Marino, Taiwan, Province of China, Luxembourg, Netherlands, Hungary, Poland, Norway, Lithuania, Bahrain, Kuwait, Qatar, Saudi Arabia, Oman, United Arab Emirates
Not in force	World Intellectual Property Organization (WIPO), Colombia, Costa Rica, Dominican Republic, Ecuador, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Guatemala, India, Egypt, Malaysia, Indonesia	Australia, Cyprus, Denmark, Spain, Croatia, Japan, Korea, Republic of, Portugal, Slovenia, San Marino, United States of America, World Intellectual Property Organization (WIPO), Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, Romania, Latvia, Lithuania, Uruguay, Bahrain, Kuwait, Qatar, Saudi Arabia, Oman, United Arab Emirates

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Pibrentasvir use in HCV Expiry date: 2033-09-17 Pan-genotypic HCV inhibitors are described. This invention also relates to methods of using these inhibitors to treat HCV infection.	WO2014047039	Use	Abbvie Inc	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Brazil, Mexico, South Africa, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia	Australia, Japan, New Zealand, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia
Filed	Türkiye, North Macedonia, Albania, Serbia	Canada, Hong Kong, Singapore, Taiwan, Province of China, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia
Not in force	World Intellectual Property Organization (WIPO), China, Mexico, Bosnia and Herzegovina, Montenegro	Japan, United States of America, World Intellectual Property Organization (WIPO), Russian Federation

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir use in HCV (without IFN or RBV) Expiry date: 2034-03-14 The present invention features interferon- and ribavirin-free therapies for the treatment of HCV. Preferably, the treatment is over a shorter duration of treatment, such as no more than 12 weeks. In one aspect, the treatment comprises administering at least two direct acting antiviral agents without interferon and ribavirin to a subject with HCV infection, wherein the treatment lasts for 12 weeks, and said at least two direct acting antiviral agents comprise (a) Compound 1 or a pharmaceutically acceptable salt thereof and (b) Compound 2 or a pharmaceutically acceptable salt thereof.	WO2014152514	Use	Abbvie Inc	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Brazil, Mexico, Serbia, South Africa, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Türkiye, North Macedonia, Albania	Canada, Australia, Cyprus, Denmark, Spain, Israel, Japan, Korea, Republic of, New Zealand, Poland, Portugal, Slovenia, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, Russian Federation, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania

Patent status/countries	Low, Low- middle and upper-middle	High income
Filed	Serbia, Türkiye, North Macedonia, Albania	Cyprus, Denmark, Spain, Hong Kong, Korea, Republic of, Poland, Portugal, Singapore, Slovenia, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania
Not in force	World Intellectual Property Organization (WIPO), China, Mexico, Serbia, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro	Cyprus, Denmark, Spain, Japan, Poland, Portugal, Slovenia, Taiwan, Province of China, United States of America, World Intellectual Property Organization (WIPO), Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, Russian Federation, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir use in HCV (without IFN or RBV) II Expiry date: 2035-04-01 The present invention features interferon-free therapies for the treatment of HCV. Preferably, the treatment is over a shorter duration of treatment, such as no more than 12 weeks. In one aspect, the treatment comprises administering at least two direct acting antiviral agents to a subject with HCV infection, wherein the treatment lasts for 12 weeks and does not include administration of either interferon or ribavirin, and said at least two direct acting antiviral agents comprise (a) Compound 1 or a pharmaceutically acceptable salt thereof and (b) Compound 2 or a pharmaceutically acceptable salt thereof.	WO2015153793	Use	Abbvie Inc	No	UNITAID 2017 patent landscape, US FDA

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Mexico	Australia, Japan, United States of America
Filed	China, Albania, North Macedonia, Serbia, Türkiye	Canada, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Finland, Hungary, Iceland, Ireland, Norway, Poland, Portugal, Romania, San Marino, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Latvia, Lithuania, Malta, Monaco, Slovakia, Slovenia, Spain

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	World Intellectual Property Organization (WIPO), China, Bosnia and Herzegovina, Montenegro, Brazil	Australia, Japan, United States of America, World Intellectual Property Organization (WIPO)

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir use in HCV (without IFN or RBV) - treatment regimen Expiry date: 2038-02-09 The present invention features interferon-free therapies for the treatment of HCV. Preferably, the treatment is over a shorter duration of treatment, such as no more than 12 weeks. In one aspect, the treatment comprises administering at least two direct acting antiviral agents to a subject with HCV infection, wherein the treatment lasts for 12 weeks and does not include administration of either interferon or ribavirin, and said at least two direct acting antiviral agents comprise (a) Compound 1 or a pharmaceutically acceptable salt thereof and (b) Compound 2 or a pharmaceutically acceptable salt thereof.	CA2994496	Use	Abbvie Inc	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted		United States of America
Filed		Canada

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	China, Brazil, Mexico, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Moldova, Republic of, Morocco, Tunisia	Australia, Japan, United States of America, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir and RBV use in HCV (without IFN) Expiry date: 2034-03-14 The present invention features interferon -free therapies for the treatment of HCV. Preferably, the treatment is over a shorter duration of treatment, such as no more than 12 weeks. In one aspect, the treatment comprises administering at least two direct acting antiviral agents and ribavirin to a subject with HCV infection, wherein the treatment lasts for 12 weeks and does not include administration of interferon, and said at least two direct acting antiviral agents comprise (a) Compound 1 and (b) Compound 2 or a pharmaceutically acceptable salt thereof as disclosed in the description.	WO2014152635	Use	Abbvie Inc	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Serbia, South Africa	Israel, Korea, Republic of
Filed		Canada, Denmark, Spain, Hong Kong, Croatia, Israel, Poland, Portugal, Singapore, Slovenia, Taiwan, Province of China, Norway, Cyprus, San Marino

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	World Intellectual Property Organization (WIPO), Brazil, China, Mexico, Serbia, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro	Australia, Denmark, Spain, Hong Kong, Croatia, Japan, New Zealand, Poland, Portugal, Slovenia, Taiwan, Province of China, United States of America, World Intellectual Property Organization (WIPO), Russian Federation, Norway, Cyprus, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Iceland, Malta, San Marino, Romania, Latvia, Lithuania

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir and RBV use in HCV (without IFN) II Expiry date: 2035-04-01 The present invention features interferon-free therapies for the treatment of HCV. Preferably, the treatment is over a shorter duration of treatment, such as no more than 12 weeks. In one aspect, the treatment comprises administering at least two direct acting antiviral agents and ribavirin to a subject with HCV infection, wherein the treatment lasts for 12 weeks and does not include administration of interferon, and said at least two direct acting antiviral agents comprise (a) Compound 1 or a pharmaceutically acceptable salt thereof and (b) Compound 2 or a pharmaceutically acceptable salt thereof.	WO2015153792	Use	Abbvie Inc	No	UNITAID 2017 patent landscape

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted		
Filed		Taiwan, Province of China

Patent status/countries	Low, Low- middle and upper-middle	High income
Not in force	World Intellectual Property Organization (WIPO), China, Mexico, Albania, North Macedonia, Serbia, Türkiye, Bosnia and Herzegovina, Montenegro	Australia, Canada, Japan, United States of America, World Intellectual Property Organization (WIPO), Belgium, Germany, France, Finland, Greece, Hungary, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Austria, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir solid compositions I Expiry date: 2036-06-24 The present invention features solid pharmaceutical compositions comprising Compound 1 and Compound 2. In one embodiment, the solid pharmaceutical composition includes (1) a first layer which comprises 100 mg Compound 1, as well as a pharmaceutically acceptable hydrophilic polymer and a pharmaceutically acceptable surfactant, all of which are formulated in amorphous solid dispersion; and (2) a second layer which comprises 40 mg Compound 2, as well as a pharmaceutically acceptable hydrophilic polymer and a pharmaceutically acceptable surfactant, all of which are formulated in amorphous solid dispersion.	WO2016210273	Composition	Abbvie Inc	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Mexico, South Africa, Mongolia, Malaysia, Colombia	Australia, Israel, Japan, Korea, Republic of, United States of America, Panama, New Zealand

Patent status/countries	Low, Low- middle and upper-middle	High income
Filed	Brazil, Costa Rica, Türkiye, India, Ecuador, Guatemala, Thailand, Albania, North Macedonia, Serbia, Bosnia and Herzegovina, Montenegro	Canada, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, New Zealand, Singapore, Hong Kong, Iceland, Norway, Poland, Romania, San Marino, Croatia, Latvia, Lithuania, Malta, Slovenia
Not in force	World Intellectual Property Organization (WIPO), Philippines, China, Dominican Republic, Peru, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Egypt, Indonesia, Viet Nam, Ukraine	Japan, United States of America, World Intellectual Property Organization (WIPO), Chile, Russian Federation

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir/Pibrentasvir solid compositions II Expiry date: 2036-07-18 The present invention features solid pharmaceutical compositions comprising Compound 1 and Compound 2. In one embodiment, the solid pharmaceutical composition includes (1) a first layer which comprises 100 mg Compound 1, as well as a pharmaceutically acceptable hydrophilic polymer and a pharmaceutically acceptable surfactant, all of which are formulated in amorphous solid dispersion; and (2) a second layer which comprises 40 mg Compound 2, as well as a pharmaceutically acceptable hydrophilic polymer and a pharmaceutically acceptable surfactant, all of which are formulated in amorphous solid dispersion.	WO2017015211	Composition	Abbvie Inc	Yes	MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	South Africa	Australia, Canada, Japan, Israel, New Zealand, Panama

Patent status/countries	Low, Low- middle and upper-middle	High income
Filed	Costa Rica, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Ecuador, Guatemala, Mongolia, Thailand	Korea, Republic of, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia, New Zealand, Singapore, Hong Kong
Not in force	World Intellectual Property Organization (WIPO), Brazil, China, Colombia, Philippines, Peru, Dominican Republic, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Egypt, Indonesia, Viet Nam, India, Mexico, Moldova, Republic of, Malaysia, Ukraine	Korea, Republic of, United States of America, World Intellectual Property Organization (WIPO), Chile, Russian Federation

MPP Licence(s)

MPP licence on Glecaprevir/Pibrentasvir (G/P)

https://medicinespatentpool.org/licence-post/glecaprevir-pibrentasvir-g-p/

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Pibrentasvir compound Expiry date: 2031-10-12 Compounds effective in inhibiting replication of Hepatitis C virus (HCV) are described. This invention also relates to processes of making such compounds, compositions comprising such compounds, and methods of using such compounds to treat HCV infection.	WO2012051361	Compound	Abbott Laboratories	Yes	Health Canada, US FDA, MPP Licence

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Colombia, Argentina, China, Dominican Republic, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Moldova, Republic of, Ecuador, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Mexico, Peru, Ukraine, Bolivia (Plurinational State of), Indonesia, Malaysia, Philippines, Viet Nam, South Africa, Brazil	United States of America, Australia, Chile, Japan, Korea, Republic of, New Zealand, Singapore, Taiwan, Province of China, Uruguay, Denmark, Spain, Portugal, Slovenia, Canada, Israel, Hong Kong, Russian Federation, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, Croatia, Romania, Latvia, Lithuania, Panama

Patent status/countries	Low, Low- middle and upper-middle	High income
Filed	Costa Rica, Ecuador, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, India, Bolivia (Plurinational State of), Mongolia, Pakistan, Paraguay, Thailand, Venezuela (Bolivarian Republic of), Guatemala	Denmark, Spain, Portugal, Slovenia, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Bahrain, Kuwait, Qatar, Saudi Arabia, Oman, United Arab Emirates
Not in force	World Intellectual Property Organization (WIPO), Costa Rica, Argentina, China, Turkmenistan, Belarus, Tajikistan, Kazakhstan, Azerbaijan, Kyrgyzstan, Armenia, Moldova, Republic of, Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Mexico, Peru, Egypt, Viet Nam	United States of America, World Intellectual Property Organization (WIPO), Chile, New Zealand, Uruguay, Denmark, Spain, Portugal, Slovenia, Canada, Russian Federation, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Monaco, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania

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Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Glecaprevir crystal forms Expiry date: 2035-06-05 The present invention features crystalline forms of Compound I. In one embodiment, a crystalline form of Compound I has characteristic peaks in the PXRD pattern as shown in any one of Figures 1-4.	WO2015188045	Polymorphs	Abbvie Inc	No	US FDA

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Mexico	United States of America, Australia
Filed	Türkiye, North Macedonia, Albania, Serbia	Canada, Japan, Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia
Not in force	World Intellectual Property Organization (WIPO), Türkiye, North Macedonia, Albania, Bosnia and Herzegovina, Montenegro, Serbia, Morocco, China	Australia, Japan, World Intellectual Property Organization (WIPO), Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Bulgaria, Czechia, Estonia, Slovakia, Hungary, Poland, Iceland, Malta, Norway, San Marino, Croatia, Romania, Latvia, Lithuania, Slovenia

Patent informations

Patent description	Representative patent	Categories	Patent holder	Licence with MPP	Patent source
Pibrentasvir crystal forms Expiry date: 2035-05-08 The present invention features crystalline forms of Compound I. In one embodiment, a crystalline form of Compound I has characteristic peaks in the PXRD pattern as shown in one of Figures 1-10.	WO2015171993	Polymorphs	Abbvie Inc	No	UNITAID 2017 patent landscape, Pat-Informed

Patent status

Patent status/countries	Low, Low- middle and upper-middle	High income
Granted	Mexico	Australia, Japan, United States of America
Filed	China, Albania, Serbia, Türkiye, North Macedonia	Canada, Liechtenstein, Italy, Norway, Malta, Denmark, Belgium, United Kingdom, Greece, Netherlands, Hungary, Croatia, Switzerland, Spain, San Marino, Slovenia, Austria, Romania, Iceland, Cyprus, Finland, France, Bulgaria, Slovakia, Poland, Latvia, Ireland, Estonia, Germany, Luxembourg, Portugal, Czechia, Lithuania, Monaco, Sweden, United States of America
Not in force	World Intellectual Property Organization (WIPO), China, Morocco, Albania, Serbia, Bosnia and Herzegovina, Montenegro, Türkiye, North Macedonia, Mexico	World Intellectual Property Organization (WIPO), Australia, Liechtenstein, Italy, Norway, Malta, Denmark, Belgium, United Kingdom, Greece, Netherlands, Hungary, Croatia, Switzerland, Spain, San Marino, Slovenia, Austria, Romania, Iceland, Cyprus, Finland, France, Bulgaria, Slovakia, Poland, Latvia, Ireland, Estonia, Germany, Luxembourg, Portugal, Czechia, Lithuania, Monaco, Sweden, Japan

Supporting material

Publications

** Improving maraviroc oral bioavailability by formation of solid drug nanoparticles. Savage AC, Tatham LM, Siccardi M, Scott T, Vourvahis M, Clark A, Rannard SP, Owen A. Eur J Pharm Biopharm. 2019 May;138:30-36. doi: 10.1016/j.ejpb.2018.05.015. **

Oral drug administration remains the preferred approach for treatment of HIV in most patients. Maraviroc (MVC) is the first in class co-receptor antagonist, which blocks HIV entry into host cells. MVC has an oral bioavailability of approximately 33%, which is limited by poor permeability as well as affinity for CYP3A and several drug transporters. While once-daily doses are now the favoured option for HIV therapy, dose-limiting postural hypotension has been of theoretical concern when administering doses high enough to achieve this for MVC (particularly during coadministration of enzyme inhibitors). To overcome low bioavailability and modify the pharmacokinetic profile, a series of 70 wt% MVC solid drug nanoparticle (SDN) formulations (containing 30 wt% of various polymer/surfactant excipients) were generated using emulsion templated freeze-drying. The lead formulation contained PVA and AOT excipients (MVCSDNPVA/AOT), and was demonstrated to be fully water-dispersible to release drug nanoparticles with z-average diameter of 728 nm and polydispersity index of 0.3. In vitro and in vivo studies of MVCSDNPVA/AOT showed increased apparent permeability of MVC, compared to a conventional MVC preparation, with in vivo studies in rats showing a 2.5-fold increase in AUC (145.33 vs. 58.71 ng h ml−1). MVC tissue distribution was similar or slightly increased in tissues examined compared to the conventional MVC preparation, with the exception of the liver, spleen and kidneys, which showed statistically significant increases in MVC for MVCSDNPVA/AOT. These data support a novel oral format with the potential for dose reduction while maintaining therapeutic MVC exposure and potentially enabling a once-daily fixed

dose combination product.

** Antiretroviral solid drug nanoparticles with enhanced oral bioavailability: production, characterization, and in vitro-in vivo correlation. McDonald TO, Giardiello M, Martin P, Siccardi M, Liptrott NJ, Smith D, Roberts P, Curley P, Schipani A, Khoo SH, Long J, Foster AJ, Rannard SP, Owen A. Adv Healthc Mater. 2014 Mar;3(3):400-11. doi: 10.1002/adhm.201300280. **

Nanomedicine strategies have produced many commercial products. However, no orally dosed HIV nanomedicines are available clinically to patients. Although nanosuspensions of drug particles have demonstrated many benefits, experimentally achieving >25 wt% of drug relative to stabilizers is highly challenging. In this study, the emulsion-templated freeze-drying technique for nanoparticles formation is applied for the first time to optimize a nanodispersion of the leading non-nucleoside reverse transcriptase inhibitor efavirenz, using clinically acceptable polymers and surfactants. Dry monoliths containing solid drug nanoparticles with extremely high drug loading (70 wt% relative to polymer and surfactant stabilizers) are stable for several months and reconstitute in aqueous media to provide nanodispersions with *z*-average diameters of 300 nm. The solid drug nanoparticles exhibit reduced cytoxicity and increased in vitro transport through model gut epithelium. In vivo studies confirm bioavailability benefits with an approximately four-fold higher pharmacokinetic exposure after oral administration to rodents, and predictive modeling suggests dose reduction with the new formulation may be possible.

** Accelerated oral nanomedicine discovery from miniaturized screening to clinical production exemplified by paediatric HIV nanotherapies. Giardiello M, Liptrott NJ, McDonald TO, Moss D, Siccardi M, Martin P, Smith D, Gurjar R, Rannard SP, Owen A. <span**

**style="color: rgb(33, 33, 33);">Nat Commun. 2016 Oct 21;7:13184. ?doi: 10.1038/ncomms13184. **

Considerable scope exists to vary the physical and chemical properties of nanoparticles, with subsequent impact on biological interactions; however, no accelerated process to access large nanoparticle material space is currently available, hampering the development of new nanomedicines. In particular, no clinically available nanotherapies exist for HIV populations and conventional paediatric HIV medicines are poorly available; one current paediatric formulation utilizes high ethanol concentrations to solubilize lopinavir, a poorly soluble antiretroviral. Here we apply accelerated nanomedicine discovery to generate a potential aqueous paediatric HIV nanotherapy, with clinical translation and regulatory approval for human evaluation. Our rapid small-scale screening approach yields large libraries of solid drug nanoparticles (160 individual components) targeting oral dose. Screening uses 1 mg of drug compound per library member and iterative pharmacological and chemical evaluation establishes potential candidates for progression through to clinical manufacture. The wide applicability of our strategy has implications for multiple therapy development programmes.

** Long-acting injectable atovaquone nanomedicines for malaria prophylaxis. Bakshi, R.P., Tatham, L., Savage, A.C. et al. Nat Commun 9, 315 (2018). ?https://doi.org/10.1038/s41467-017-02603-z **

Chemoprophylaxis is currently the best available prevention from malaria, but its

efficacy is compromised by non-adherence to medication. Here we develop a long-acting injectable formulation of atovaquone solid drug nanoparticles that confers long-lived prophylaxis against *Plasmodium berghei* ANKA malaria in C57BL/6 mice. Protection is obtained at plasma concentrations above 200 ng ml-1 and is causal, attributable to drug activity against liver stage parasites. Parasites that appear after subtherapeutic doses remain atovaquone-sensitive. Pharmacokinetic–pharmacodynamic analysis indicates protection can translate to humans at clinically achievable and safe drug concentrations, potentially offering protection for at least 1 month after a single administration. These findings support the use of long-acting injectable formulations as a new approach for malaria prophylaxis in travellers and for malaria control in the field.

Additional documents

No documents were uploaded

Useful links

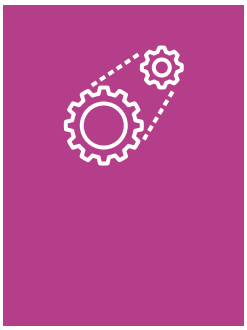
There are no additional links

Access principles

Collaborate for development

Consider on a case by case basis, collaborating on developing long acting products with potential significant public health impact, especially for low- and middle-income countries (LMICs), utilising the referred to long-acting technology

Agree



Share technical information for match-making assessment

Provide necessary technical information to a potential partner, under confidentiality agreement, to enable preliminary assessment of whether specific medicines of public health importance in LMICs might be compatible with the referred to long-acting technology to achieve a public health benefit

Agree

Work with MPP to expand access in LMICs

In the event that a product using the referred to long-acting technology is successfully developed, the technology IP holder(s) will work with the Medicines Patent Pool towards putting in place the most appropriate strategy for timely and affordable access in low and middle-income countries, including through licensing

Agree

Comment & Information

No.

Illustrations

SDN banner