ISRCTN72772236 https://doi.org/10.1186/ISRCTN72772236

Efficacy and safety of DMX-200 in patients with focal segmental glomerulosclerosis

Submission date	Recruitment status	[_] Prospectively registered
05/02/2022	Recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
07/07/2022	Ongoing	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
15/12/2025	Urological and Genital Diseases	[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Focal segmental glomerulosclerosis (FSGS) is an injury of the filtering part of the kidneys (glomerulus). It is a progressive kidney disease where the filters (glomeruli) of the kidneys become more ‘leaky’ and allow protein from the blood to collect in the urine (proteinuria). The kidneys' ability to clean the blood is impaired which can lead to kidney failure. FSGS is routinely treated with a type of drug called an angiotensin II receptor blocker (ARB). The aim of this study is to assess the safety and effectiveness of a new drug called DMX-200 (repagermanium) in adult patients with FSGS who are being treated with an ARB. DMX-200 is designed to inhibit the inflammatory response of chronic disease, including FSGS, when given alongside an ARB. This study will investigate to see if the study drug, DMX-200 (repagermanium), reduces the amount of proteinuria and slows the decline of kidney function when taken with an ARB.

Who can participate?
Patients between the ages of 12 to 80 years old with FSGS

What does the study involve?
The study consists of five periods:
1. Screening period (up to 4 weeks), to check that participants qualify for the study.
2. Titration period (up to 4 weeks), required for participants who are not already receiving an ARB treatment at the maximum tolerated dose.
3. Stabilisation period (6 weeks), to check participants remain eligible.
4. Double-blind treatment period (104 weeks), where all participants will be randomly assigned to receive either the study drug or placebo (50/50 chance). A placebo looks like a medicine but does not have any medicine in it.
5. Follow-up period (4 weeks), for post-treatment safety investigations.

The double-blind period will be followed by an open-label extension (OLE) which aims to assess the long-term efficacy and safety of DMX 200 for up to 2 additional years. The OLE period schedule involves participant visits to the site approximately every 6 months.

What are the possible benefits and risks of participating?
The study medication DMX-200 (repagermanium) and propagermanium (an alternative crystal

form of repagermanium) have both been available as nutritional and dietary supplements since the 1970s in Japan and in other countries including the USA and Australia since the 1980s. The use of repagermanium as a dietary supplement is often provided at doses of over 1000 mg/day and human studies have used doses up to 4.0 g/day with no observed negative effects.
Based on published data with propagermanium (Serocion®) at a dose of 30 mg daily in 2,015 patients with hepatitis B, the most frequent adverse events were elevated aspartate aminotransferase (AST), elevated alanine aminotransferase (ALT), general languor, and diminished appetite. In this population, a major adverse reaction of acute exacerbation of chronic hepatitis B has been observed.
Based on clinical data to date, DMX-200 administered at daily doses from 30 to 240 mg for a total duration of up to 28 weeks was found to be safe and well tolerated, and no safety signals were observed. Treatment-associated reduction in proteinuria in patients with FSGS may translate into a long-term nephroprotective (kidney protective) effect. DMX-200 (repagermanium) has been designed to reduce proteinuria and slow the rate of decline of kidney function. The antiproteinuric effect of DMX-200 in patients with FSGS was observed in the DMX-200-202 study. The current study will provide additional and essential long-term effectiveness data to determine the durability of the antiproteinuric effect of DMX-200 over time, as well as its ability to slow the progression of FSGS, as measured by change in estimated glomerular filtration rate (eGFR) compared with placebo. There is no guarantee that patients will benefit from taking part in this study. However, the information obtained in this study may help in the treatment of future patients with FSGS.
This clinical study protocol has been designed such that the risk to patients in this study will be minimised by adequate selection of eligibility criteria, and schedule of clinical monitoring, administration, and treatment duration. The sponsor will immediately notify the Investigator if any information that might materially influence the benefit/risk assessment of DMX-200 becomes available during the study.

Where is the study run from?
Dimerix Bioscience Pty Ltd (Australia)

When is the study starting and how long is it expected to run for?
January 2022 to February 2030

Who is funding the study?
Dimerix Bioscience Pty Ltd (Australia)

Who is the main contact?
Dr David Fuller, ACTION3@dimerix.com

Contact information

Type(s)
Principal investigator

Contact name
Dr Smeeta Sinha

Contact details
Stott Lane
Salford
United Kingdom

M6 8HD
+44 (0)161 01612065710
smeeta.sinha@srft.nhs.uk

Type(s)
Public, Scientific

Contact name
Dr David Fuller

Contact details
425 Smith Street
Melbourne
Australia
3065
+61 (0)1300 813 321
ACTION3@dimerix.com

Additional identifiers

Clinical Trials Information System (CTIS)
2021-004174-64

Integrated Research Application System (IRAS)
1004525

ClinicalTrials.gov (NCT)
NCT05183646

Protocol serial number
DMX-200-301

Central Portfolio Management System (CPMS)
50927

Study information

Scientific Title
A pivotal Phase III, multicenter, randomized, double-blind, placebo-controlled study of the efficacy and safety of DMX-200 in patients with focal segmental glomerulosclerosis (FSGS) who are receiving an angiotensin II receptor blocker (ARB)

Acronym
ACTION3

Study objectives
Current study hypothesis as of 26/06/2025:
1. To evaluate the efficacy of DMX-200 in terms of urine PCR and eGFR slope in adult patients with focal segmental glomerulosclerosis (FSGS) who are receiving an angiotensin II receptor blocker (ARB)

2. To evaluate the safety and tolerability of treatment with DMX-200 in adult and adolescent patients with FSGS who are receiving an ARB
3. To evaluate the effect of DMX-200 on kidney function parameters, including proteinuria, in adult patients with FSGS who are receiving an ARB

4. To assess the long-term safety and tolerability of open-label treatment with DMX-200 in patients with FSGS who are receiving an ARB.
5. To assess the long-term efficacy of open-label treatment with DMX-200 in patients with FSGS who are receiving an ARB
6. To evaluate the long-term effect of open-label treatment with DMX-200 on kidney function parameters in patients with FSGS who are receiving an ARB

Previous study hypothesis:
1. To evaluate the efficacy of DMX-200 in terms of urine PCR and eGFR slope in patients with focal segmental glomerulosclerosis (FSGS) who are receiving an angiotensin II receptor blocker (ARB)
2. To evaluate the safety and tolerability of treatment with DMX-200 in patients with FSGS who are receiving an ARB
3. To evaluate the effect of DMX-200 on kidney function parameters including proteinuria in patients with FSGS who are receiving an ARB

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 08/03/2022, Fast-Track Research Ethics Committee (Health Research Authority) (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; -; fasttrack.rec@hra.nhs.uk), ref: 22/FT/0027

Study design
Randomized placebo-controlled double-blind trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Focal segmental glomerulosclerosis

Interventions
Current interventions as of 26/06/2025:
Patients will receive either DMX-200 as 120 mg capsules taken orally twice daily (BID) or matching placebo capsules twice daily (BID), over a treatment period of up to 104 weeks. Patients will continue on a stable dose of angiotensin II receptor blocker (ARB) at the maximal tolerated dose and ≥50% of the maximum recommended dose as per the product label throughout the study as prescribed per standard of care. Post-treatment, there will be a 4-week follow-up period and patients will perform their final assessments at the End of Study (EOS) visit

at week 108. Randomisation will be performed using an interactive response technology (IRT) system based on a predefined randomisation schedule. A randomisation blocking scheme (1:1 ratio) will be used to ensure that the balance between the treatment groups is maintained.

The double-blind period will be followed by an open-label extension (OLE), which aims to assess the long-term efficacy and safety of DMX 200 for up to 2 additional years. The OLE period schedule involves participant visits to the site approximately every 6 months.

Previous interventions:
Patients will receive either DMX-200 as 120 mg capsules taken orally twice daily (BID) or matching placebo capsules twice daily (BID), over a treatment period of up to 104 weeks. Patients will continue on a stable dose of angiotensin II receptor blocker (ARB) at the maximal tolerated dose and ≥50% of the maximum recommended dose as per the product label throughout the study as prescribed per standard of care. Post-treatment, there will be a 4-week follow-up period and patients will perform their final assessments at the End of Study (EOS) visit at week 108. Randomisation will be performed using an interactive response technology (IRT) system based on a predefined randomisation schedule. A randomisation blocking scheme (1:1 ratio) will be used to ensure that the balance between the treatment groups is maintained.

Intervention Type
Drug

Phase
Phase III

Drug/device/biological/vaccine name(s)
DMX-200

Primary outcome(s)
Current primary outcome measure as of 26/06/2026:
1. Treatment efficacy measured by the percentage change in urine protein creatinine ratio (PCR) (based on 24-hour urine collection) from baseline to week 35 following treatment with DMX-200 compared with placebo
2. Treatment efficacy measured by the slope of estimated glomerular filtration rate (eGFR) from baseline to week 104 following treatment with DMX-200 compared with placebo
3. Safety and tolerability of open-label treatment measured by the incidence and severity of treatment-related adverse events (AEs) and any adverse events of special interest (AESIs) and serious adverse events (SAEs) following long-term treatment with DMX-200

Previous primary outcome measure:
1. Treatment efficacy measured by the percentage change in urine protein creatinine ratio (PCR) (based on 24-hour urine collection) from baseline to week 35 following treatment with DMX-200 compared with placebo' after treatment
2. Treatment efficacy measured by the slope of estimated glomerular filtration rate (eGFR) from baseline to week 104 following treatment with DMX-200 compared with placebo' after treatment

Key secondary outcome(s))
Current secondary outcome measures as of 26/06/2026:
1. Safety and tolerability of treatment measured by the incidence and severity of adverse events (AEs) following treatment with DMX-200 compared with placebo

2. Safety and tolerability of treatment measured by the incidence of clinically significant changes in the safety profile of patients treated with DMX-200 compared with placebo, as measured by changes from baseline in clinical laboratory evaluations (hematology, coagulation, clinical chemistry, and urinalysis), ECGs, vital signs, and physical examinations
3. Kidney function parameters measured by the proportion of patients achieving proteinuria response following treatment with DMX-200 compared with placebo at any time during the double-blind period, defined as:
3.1. Complete response: 24-hour urine PCR reduction to <0.3 g/g (<33.9 mg/mmol)
3.2. Modified partial remission (FPRE): 24-hour urine PCR reduction ≥40% from baseline and <1.5 g/g (<169.5 mg/mmol)
3.3. No response (failure to meet any response criteria)
4. Kidney function parameters measured by the proportion of patients on treatment with DMX-200 compared with placebo that meet a composite endpoint of worsening in kidney function, as defined by:
4.1. The onset of kidney failure (initiation of chronic dialysis, kidney transplantation, or sustained eGFR of <15 ml/min/1.73 m²)
4.2. A 40% decline in eGFR from baseline
4.3. Death from kidney or cardiovascular causes
5. Long-term treatment efficacy measured by the slope of eGFR from Week 108 (Baseline)
6. Long-term treatment efficacy measured by the change in eGFR from Week 108 (Baseline) at each visit
7. Long-term treatment efficacy measured by the percent change in urine PCR (based on first morning void urine samples) from Week 108 (Baseline) at each visit
8. Long-term effect of treatment measured by the proportion of patients on treatment with DMX-200 that meet a composite endpoint of worsening in kidney function, as defined by:
8.1. The onset of kidney failure (initiation of chronic dialysis, kidney transplantation, or sustained eGFR of <15 ml/min/1.73 m²)
8.2. A 40% decline in eGFR from baseline
8.3. Death from kidney or cardiovascular causes

Previous secondary outcome measures:
1. Safety and tolerability of treatment measured by the incidence and severity of adverse events (AEs) throughout the study duration
2. Safety and tolerability of treatment with DMX-200, measured by the incidence of clinically significant changes in the safety profile of patients treated with DMX-200 compared with placebo, measured by changes in clinical laboratory evaluations (haematology, coagulation, clinical chemistry, and urinalysis), ECGs, vital signs, and physical examinations from baseline until EOS
3. Kidney function parameters measured by the proportion of responders and non-responders throughout the study duration, defined as:
3.1. Complete response: 24-hour urine PCR reduction to <0.3 g/g (<33.9 mg/mmol)
3.2. Modified partial remission (FPRE): 24-hour urine PCR reduction ≥40% from baseline and <1.5 g/g (<169.5 mg/mmol)
3.3. No response (failure to meet any response criteria)
4. Kidney function parameters measured by the proportion of patients that meet a composite endpoint of worsening in kidney function throughout the study duration, as defined by:
4.1. The onset of kidney failure (initiation of chronic dialysis, kidney transplantation, or sustained eGFR of <15 ml/min/1.73 m²)
4.2. A 30% decline in eGFR from baseline
4.3. Death from kidney or cardiovascular causes

Completion date

27/02/2030

Eligibility

Key inclusion criteria

Current participant inclusion criteria as of 26/06/2026:
1. Patients must be 12 to 80 years old.
2. Primary FSGS, genetic FSGS, or FSGS of undetermined cause (FSGS-UC). NOTE: Primary FSGS and FSGS-UC must be biopsy-proven within 7 years prior to Screening. The kidney biopsy could have been obtained at any time within the previous 7 years and should be based on light microscopy with supportive findings on either electron microscopy or immunofluorescence. No biopsy is required where there is a documented genetic mutation of a podocyte protein associated with FSGS. All patients should demonstrate a clinical history and disease course consistent with FSGS.
3. Must be either receiving a dose of an ARB at the maximal tolerated dose and ≥50% of the maximum recommended dose per the product label, or willing to transition to this treatment (including transition from an ACE inhibitor) prior to Stabilization.
4. If taking corticosteroids, the dosage must be ≤ 10mg / day prednisone (or equivalent) and stable for ≥4 weeks prior to and during both Screening and Stabilization, and there must be no plan to change their corticosteroid treatment regimen during the study. Use of inhaled corticosteroids for respiratory diseases is allowed.
5. If taking aldosterone inhibitors, mineralocorticoid receptor antagonists, direct renin inhibitors, sodium-glucose co-transporter-2 (SGLT2) inhibitors, or endothelin receptor antagonists (ERAs, including dual antagonists), the dose and regimen must be stable for ≥12 weeks prior to Screening and maintained during Stabilization and patients must have no plan to change their treatment regimen during the study.
6. Urine PCR >1.5 g/g (>169.5 mg/mmol) or 24-hour total protein >1.5 g/day based on 24-hour urine collection during both Screening and Qualification
7. Estimated GFR at screening:
7.1. For adults (≥ 18 yrs): eGFR ≥25 and ≤120 mL/min/1.73 m2
using the CKD Epidemiology Collaboration (CKD-EPI) Creatinine Equation (2009)
7.2. For adolescent Patients(<18 yrs): eGFR ≥25 mL/min/1.73 m2 using the Modified Schwartz formula
8. Seated blood pressure ≤160/100 mm Hg (mean of 3 values) (patients ≥18 years of age) or between the 5th and 95th percentile for age, sex, and height (patients <18 years of age) at Screening.
9. Body weight ≥35 kg (all patients) AND a BMI ≤40 kg/m2 (patients ≥18 years of age) or between the 5th and 98th percentile for age and sex (patients <18 years of age) at Screening.
10. A female patient is eligible to participate if she is not pregnant or planning to become pregnant during the study, not breastfeeding, and at least one of the following conditions applies:
10.1. Is not of childbearing potential
10.2. If of childbearing potential and beginning at menarche, agrees to use a highly effective method of contraception consistently during the treatment period
11. A male patient with a female partner of childbearing potential is eligible to participate if he agrees to use acceptable contraception and refrains from donating sperm during this period.

Open-Label Extension:
1. Patients who have completed participation in the double-blind period
2. The patient received blinded IP throughout the duration of the double-blind period
3. The patient continues to meet the contraceptive requirements

Previous participant inclusion criteria:
1. A diagnosis of FSGS confirmed by kidney biopsy. NOTE: The biopsy can have been obtained at any time. Diagnosis of FSGS should be based on light microscopy with supportive findings on either electron microscopy or immunofluorescence analysis (preferably both) and the clinical history and disease course consistent with primary FSGS, genetic FSGS, or FSGS of undetermined cause
2. Must be receiving a stable dose of an ARB (irbesartan, losartan, valsartan, candesartan, olmesartan medoxomil, or azilsartan medoxomil) at the maximal tolerated dose and ≥50% of the maximum recommended dose per the product label for 6 weeks prior to Screening, or willing to transition to this treatment during the Titration and Stabilization period
3. If taking corticosteroids, the dosage must be stable for ≥4 weeks prior to Screening and during the Stabilization period, and patients must have no plan to change their treatment regimen during the study
4. If taking aldosterone inhibitors, mineralocorticoid receptor antagonists, direct renin inhibitors, or sodium-glucose co-transporter-2 inhibitors, the dose and regimen must be stable for ≥26 weeks prior to Screening and during the Stabilization period and patients must have no plan to change their treatment regimen during the study
5. Urine protein/creatinine ratio (PCR) >1.5 g/g (>169.5 mg/mmol) or 24-hour total protein >1.5 g /day based on 24-hour urine collection during Screening
6. Estimated glomerular filtration rate (eGFR) ≥30 ml/min/1.73 m² at Screening and ≥25 mL/min /1.73 m² at the Qualification visit (Week -1)
7. Seated blood pressure ≤160/100 mmHg (mean of 3 values) at Screening and ≤140/90 mmHg (mean of three values) at the Qualification visit (Week -1)
8. Body mass index ≤40 kg/m² at Screening

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
12 years

Upper age limit
80 years

Sex
All

Total final enrolment
0

Key exclusion criteria
Current participant exclusion criteria as of 26/06/2025:
1. Has FSGS secondary to another condition.
2. Patients with nephrotic syndrome (>3.5 g/day proteinuria and serum albumin <30 g/L) who

have not previously been treated with standard of care FSGS-directed therapies (including steroids).
3. History of type 1 diabetes mellitus, or uncontrolled type 2 diabetes mellitus (defined as glycated hemoglobin [HbA1c] >8% at Screening)
4. History of lymphoma, leukemia, or any active malignancy within the past 2 years (except for basal cell or squamous cell carcinomas of the skin or cervical carcinoma in situ that have been resected and with no evidence of metastatic disease).
5. Active clinically significant hepatobiliary disease.
6. Documented history of heart failure (New York Heart Association Class III/IV) or a major adverse cardiac event within 12 weeks prior to Screening.
7. Has a physical, medical, or psychological condition, that in the opinion of the Investigator, may interfere with the evaluation the study.
8. The patient has a history of alcohol or illicit drug use disorder within 1 year prior to Screening.
9. Had a prior organ transplant or stem cell transplant, with the exception of corneal transplant.
10. Positive screening assessment for viral hepatitis B surface antigen, or anti-hepatitis C virus (HCV) antibody AND positive HCV RNA, or human immunodeficiency virus 1 and 2.
11. Serum potassium levels >5.5 mmol/L at Screening.
12. Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) >2 × upper limit of normal (ULN) at Screening.
13. Treatment with non-steroid immunosuppressant agents including biological drugs (e.g. rituximab), calcineurin inhibitors, cyclophosphamide, azathioprine, or mycophenolate mofetil within 12 weeks prior to Screening.
14. History of serious side effects or allergic response to an angiotensin II antagonist or has a known sensitivity to any components in the IP.
15. Unable to swallow oral medication.
16. Prior participation in any Dimerix-sponsored DMX-200 clinical study.
17. Participation in a clinical study with an IP within 28 days or 5 half-lives (whichever is longer) prior to Screening or plans to participate in another study during the course of this study.
18. Are study site personnel directly affiliated with this study and their immediate families

Open-Label Extension:
1. The patient has met the criteria for premature and permanent IP discontinuation
2. Any safety concerns identified during the double-blind period which may interfere with the patient's continued participation during the OLE period.

Previous participant exclusion criteria:
1. Has FSGS secondary to another condition.- History of type 1 diabetes mellitus, or uncontrolled type 2 diabetes mellitus (defined as glycated hemoglobin >8%), or non-fasting blood glucose >10 mmol/l at Screening
2. History of lymphoma, leukemia, or any active malignancy within the past 2 years (except for basal cell or squamous cell carcinomas of the skin or cervical carcinoma in situ that have been resected and with no evidence of metastatic disease)
3. History of jaundice, active hepatitis, or known hepatobiliary disease (except asymptomatic cholelithiasis)
4. Documented history of heart failure (New York Heart Association Class III/IV) or a major adverse cardiac event within 12 weeks prior to Screening
5. Serum potassium levels >5.5 mmol/l at Screening
6. Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) >2 × upper limit of normal at Screening
7. Treatment with immunosuppressant biological drugs, calcineurin inhibitors,

cyclophosphamide, azathioprine, or mycophenolate mofetil within 26 weeks prior to Screening 8. Patients with <80.0% compliance to ARB treatment during the Stabilization Period (Weeks -6 to -1) of the study, as confirmed at the Qualification visit

Date of first enrolment
23/02/2022

Date of final enrolment
27/02/2026

Locations

Countries of recruitment
United Kingdom

England

Scotland

Argentina

China

Germany

Mexico

Spain

United States of America

Study participating centre
King's College Hospital
Denmark Hill
London
England
SE5 9RS

Study participating centre
Great Ormond Street Hospital for Children
Great Ormond Street
London
England
WC1N 3JH

Study participating centre
Nottingham City Hospital
Hucknall Road
Nottingham
England
NG5 1PB

Study participating centre
Royal Manchester Childrens Hospital
Hospital Road
Pendlebury
Swinton
Manchester
England
M27 4HA

Sponsor information

Organisation
Dimerix Bioscience Pty Ltd

Funder(s)

Funder type
Industry

Funder Name
Dimerix Bioscience Pty Ltd

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be stored in a non-publically available repository. The study datasets will be stored on an IQVIA network drive. A ticket should be raised with IT to obtain access to the folder. Data type = EDC output in SAS (CRF extract). Datasets are generated as per request from the Biostatistician team. A programmer will place the datasets at the required location/folder (on a network drive) for a Biostatistician to review. The datasets would be used for the analysis of the study endpoints.

IPD sharing plan summary

Stored in non-publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes