Biomarkers of asthma remission after dupilumab treatment

Submission date	Recruitment status Recruiting	[X] Prospectively registered		
09/05/2023		☐ Protocol		
Registration date	Overall study status Ongoing	Statistical analysis plan		
12/05/2023		Results		
Last Edited	Condition category Respiratory	☐ Individual participant data		
12/05/2025		[X] Record updated in last year		

Plain English summary of protocol

Background and study aims

Asthma affects over 350 million people in the world. Approximately 5-10% of people with asthma have severe disease. Asthma is a lung disease associated with inflammation (swelling) of the airways. Certain proteins made by the body, called interleukins, can make this inflammation worse. One of these interleukin proteins is called interleukin- 4Ra (IL4Ra). Interleukin-4Ra appears to play an important role in asthma. It plays a role by helping white blood cells (called eosinophils) stay alive. Eosinophils are involved in the inflammation of the airways. Dupilumab is a medicine that blocks the effect of Interleukin-4Ra on eosinophils (and therefore reduces inflammation). It is given as an injection under the skin and may help reduce inflammation in the airways of people with asthma. Previous research studies in people with severe asthma have shown an improvement in asthma control in those who received dupilumab, and it is now approved for the treatment of severe asthma in the UK. Research studies have shown that people who received dupilumab experienced about half as many asthma exacerbations (severe episodes of asthma or attacks) as those given placebo (dummy) injections. In addition, it also improved their lung function and asthma control. This research study will observe all participants having dupilumab injections as part of their normal clinical care. This will help to understand what might be causing the high levels of disease control, including the absence of symptoms and exacerbations. By doing this, it is hoped that information will be obtained to help improve asthma treatment in the future. The study team will investigate the effect of dupilumab on all aspects of asthma such as changes in quality of life, symptoms, inflammation and breathing tests.

Who can participate?

Adults (≥18 years old) following a clinical decision to initiate dupilumab for severe asthma after meeting licensing, local and national guidelines.

What does the study involve?

Every participant taking part in the study will be receiving dupilumab injections as part of their normal clinical care. Participants will be asked to attend a total of 5 scheduled visits at the study centre. Visit 0 and Visit 1 can be combined where feasible to do so. In between study visits, participants will be asked to complete some breathing tests at home. They will be asked to monitor their peak flow (maximum rate a person can breathe out) and a test for exhaled nitric

oxide (FeNO) every day for the first 4 weeks of the study and then once a week afterwards. This is to monitor the usual variation in their asthma symptoms and airway function, and how this might change if they become unwell.

What are the possible benefits and risks of participating?

There is no guarantee that participants will receive any benefit from this study, and taking part in this study may or may not improve their asthma. Information from this study may help asthma treatment in the future. There are possible risks, disadvantages and inconveniences with any research study. The individual risks of each procedure and investigation are described fully in the participant information sheet. Participants will potentially have more tests and procedures if they take part in the study, compared to standard hospital visits. Study visits could take more time than standard hospital visits and you will have more blood taken. Each study visit can last approximately 1-3 hours. Participants will have to do additional monitoring of their asthma at home as the study requires them to keep track of their peak flow reading and lung inflammation with FeNO (approximately 10 minutes).

Where is the study run from?

This is a research project organised by the NIHR Leicester Biomedical Research Centre – Respiratory, at Glenfield Hospital. This study is part of a larger programme of studies, called 3TR. 3TR is a European research group aimed at improving the treatment of asthma and chronic obstructive pulmonary disease (COPD). This study is being conducted by a group of clinical and academic experts from UK universities and Europe, together with pharmaceutical companies who have an interest in asthma. The sponsor of the study is the University of Leicester, UK. The sponsor is the organisation responsible for ensuring that the study is carried out correctly.

Who is funding the study?

Sanofi, the pharmaceutical company that makes dupilumab, is supporting the research by providing funding to the research units to carry out the study tests.

When is the study starting and how long is it expected to run for? March 2023 to December 2026

Who is the main contact?
UK project management team, abc-3tr@leicester.ac.uk
Chief Investigator, Prof Chris Brightling, abc-3tr@leicester.ac.uk

Study website

https://3trbio.com/

Contact information

Type(s)

Public

Contact name

Miss Bonnie Millar

Contact details

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Type(s)

Principal Investigator

Contact name

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Additional identifiers

EudraCT/CTIS number

Nil known

IRAS number

320731

ClinicalTrials.gov number

Nil known

Secondary identifying numbers

UoL0870, IRAS 320731, CPMS 55224

Study information

Scientific Title

Biomarkers and mechanisms of asthma remission following treatment with dupilumab in adults with severe asthma – 3TR ABC

Acronym

DUPIBIO – 3TR ABC

Study objectives

Asthma remission following treatment with dupilumab is related to baseline phenotype and biomarker(s) or early changes in biomarkers.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 13/04/2023, East Midlands – Nottingham 1 (The Old Chapel, Royal Standard Place, Nottingham, NG1 6FS, United Kingdom; +44 207 104 8089; nottingham1.rec@hra.nhs.uk), ref: 23 /EM/0031

Approved 13/04/2023, East Midlands - Nottingham Research Ethics Committee 1 (Health Research Authority, 2nd Floor, Equinox House, City link, Nottingham, NG2 4LA, UK; +44(0) 2078115; nottingham1.rec@hra.nhs.uk), ref: 23/EM/0031

Study design

Multi-centre, multi-national observational study

Primary study design

Observational

Secondary study design

Longitudinal study

Study setting(s)

Hospital

Study type(s)

Treatment

Participant information sheet

Not available in web format, please use the contact details to request a patient information sheet.

Health condition(s) or problem(s) studied

Severe asthma

Interventions

DUPIBIO – 3TR ABC is a multi-centre observational study of patients with severe asthma following initiation of treatment with dupilumab (anti-IL4Ra) as part of their standard of care. Participants will be extensively characterised at baseline; reviewed throughout the year with formal clinical and biological assessment at 4, 16 and 52 weeks. Asthma remission will be defined for each domain: asthma control, lung function, and exacerbations as a composite measure and independently. Biomarkers and multi-omic analysis will be undertaken in the biosamples to determine biological pathways and bio-signatures associated with asthma remission. This study is one of three arms aligned to the 3TR (taxonomy, treatment, targets and remission) EU-IMI consortium asthma biologics consortium (3TR-ABC).

The primary objective is to determine baseline biomarkers of remission after 1 year of biological therapy, with remission defined as ACQ-5 <1.5, post-bronchodilator FEV1 percent predicted ≥80% OR >10% improvement, as well as no exacerbations.

The secondary objectives are to determine baseline and short-term biomarkers of long-term remission after 1 year of biological therapy. Additionally:

- 1. Change in biomarker profiles in remission versus non-remission groups
- 2. Baseline and change in biomarker profile for
- 2.1. Each response outcome individually
- 2.2. Global evaluation treatment efficacy (GETE), Patient and physician-rated response-defined response
- 2.3. The 3TR agreed composite assessment of response
- 2.4. Change in profiles from baseline to 4 and 16 weeks as a predictor of remission
- 3. Determine the change in all response variables against baseline biomarker data and change in biomarkers as continuous variables.

Intervention Type

Other

Primary outcome measure

Primary outcome measures are assessed at 1 year:

- 1. Asthma control measured using the Asthma Control Questionnaire 5 Questions (ACQ5) <1.5
- 2. Lung function post-bronchodilator (post-BD) Forced Expiratory Volume in 1 Second (FEV1) percent predicted measured using spirometry
- 3. Exacerbations history measured using the patient's medical notes

Secondary outcome measures

Current secondary outcome measures as of 30/07/2024:

- 1. Patient-reported outcomes:
- 1.1. Asthma Control Questionnaire 5 Questions (ACQ5), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.2. The Asthma Quality of Life Questionnaire (AQLQ), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.3. Self-Assessment Questionnaire (SAQ), assessed at visit 1 (week 0), Visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.4. EQ5D5L health status questionnaire, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.5. Work Productivity and Activity Impairment Questionnaire General Health (WPAI:GH), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.6. Sino-Nasal Outcome Test-22 Questionnaire (SNOT22), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.7. Nijmegen Questionnaire (NQ), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.8. Epworth Sleepiness Scale (ESS), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.9. Hospital Anxiety and Depression Scale (HADS), assessed visit 1 (week 0), visit 2 (week 2), visit 3 (week 16), visit 4 (week 52).
- 1.10. Functional Assessment of Chronic Illness Therapy (FACIT) fatigue scale, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.11. Cognitive Failures Questionnaire, Screen for Cognitive Impairment in Psychiatry (SCIP),

Trail Making test (TMT) part B (specific sites), assessed at visit 1 (week 0), visit 3 (week 16) and visit 4 (week 52).

- 1.12. Global evaluation treatment efficacy (GETE), patient and physician-related response, assessed at visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.13. Visual analogue scale (VAS) scale 3TR question (patient and physician perceived), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.14. Symptoms VAS, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52) and unscheduled exacerbation visit at sites where feasible/applicable.

2. Lung function:

- 2.1. Pre and post BD spirometry, assessed at visit 1 (week 0).
- 2.2. Post BD Forced Expiratory Volume in 1 Second (FEV1) assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.

3. Biomarkers:

- 3.1. Blood: differential cell count, total IgE and transcriptome (and in a subgroup scRNA), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52). Specific IgE if not done with skin prick tests (cat dander, dog dander, house dust mite, grass pollen and Aspergillus IgE) and immunophenotyping, methylome (DNA collected for possible later eQTL analyses depending upon transcriptome data), assessed at visit 1 (week 0).
- 3.2. Nasal sampling: nasal brushings, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.
- 3.3. Breath:
- 3.3.1. FeNO is assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit.
- 3.3.2. Breathomics is assessed at visit 1 (week 0), visit 2 (week 4), and visit 4 (week 52).
- 3.4. Sputum: cell differential, transcriptome, micro/metagenomics and proteomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.
- 3.5. Saliva: Microbiome analysis and DNA, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible /applicable.
- 3.6. Urine: Urinary lipid mediators and metabolomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible /applicable.
- 3.7. Stool (optional): micro/metagenomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 3.8. Bronchoscopy (optional): brush biopsy, bronchial biopsies and broncho-alveolar lavage (BAL) for transcriptome, protein, micro/metagenomics, cellular and structural analyses, assessed at visit 1 (week 0) and visit 4 (week 52).
- 3.9. Mucosal biopsies: histological analysis of cells and inflammatory mediators, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).

Previous secondary outcome measures as of 19/01/2024:

1. Patient-reported outcomes:

- 1.1. Asthma Control Questionnaire 5 Questions (ACQ5), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.2. The Asthma Quality of Life Questionnaire (AQLQ), assessed at visit 1 (week 0), visit 2 (week

- 4), visit 3 (week 16), visit 4 (week 52).
- 1.3. Self-Assessment Questionnaire (SAQ), assessed at visit 1 (week 0), Visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.4. EQ5D5L health status questionnaire, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.5. Work Productivity and Activity Impairment Questionnaire General Health (WPAI:GH), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.6. Sino-Nasal Outcome Test-22 Questionnaire (SNOT22), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.7. Nijmegen Questionnaire (NQ), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.8. Epworth Sleepiness Scale (ESS), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
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- 1.10. Functional Assessment of Chronic Illness Therapy (FACIT) fatigue scale, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
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- 1.12. Global evaluation treatment efficacy (GETE), patient and physician-related response, assessed at visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.13. Visual analogue scale (VAS) scale 3TR question (patient and physician perceived), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 1.14. Symptoms VAS, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52) and unscheduled exacerbation visit at sites where feasible/applicable.

2. Lung function:

- 2.1. Pre and post BD spirometry, assessed at visit 1 (week 0).
- 2.2. Post BD Forced Expiratory Volume in 1 Second (FEV1) assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.

3. Biomarkers:

- 3.1. Blood: differential cell count, total IgE and transcriptome (and in a subgroup scRNA), assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52). Specific IgE if not done with skin prick tests (cat dander, dog dander, house dust mite, grass pollen and Aspergillus IgE) and immunophenotyping, methylome (DNA collected for possible later eQTL analyses depending upon transcriptome data), assessed at visit 1 (week 0).
- 3.2. Nasal sampling: nasal brushings, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week
- 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.
- 3.3. Breath: Fractional exhaled nitric oxide (FeNO) and breathomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
- 3.4. Sputum: cell differential, transcriptome, micro/metagenomics and proteomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.
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- 3.6. Urine: Urinary lipid mediators and metabolomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible /applicable.

- 3.7. Stool (optional): micro/metagenomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
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- 3.9. Mucosal biopsies: histological analysis of cells and inflammatory mediators, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).

Previous secondary outcome measures as of 09/08/2023:

1. Patient-reported outcomes:

- 1.1. Asthma Control Questionnaire 5 Questions (ACQ5), assessed at visit 1 (week 0), visit 3 (week
- 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.
- 1.2. The Asthma Quality of Life Questionnaire (AQLQ), assessed at visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
- 1.3. Self-Assessment Questionnaire (SAQ), assessed at visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
- 1.4. EQ5D5L health status questionnaire, assessed at visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
- 1.5. Work Productivity and Activity Impairment Questionnaire General Health (WPAI:GH), assessed visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
- 1.6. Sino-Nasal Outcome Test-22 Questionnaire (SNOT22), assessed visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
- 1.7. Nijmegen Questionnaire (NQ), assessed visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
- 1.8. Epworth Sleepiness Scale (ESS), assessed visit 1 (week 0), visit 3 (week 16), visit 4 (week 52).
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- 3.5. Oral gargle: Microbiome analysis, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible/applicable.
- 3.6. Urine: Urinary lipid mediators and metabolomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52), and unscheduled exacerbation visit at sites where feasible /applicable.
- 3.7. Stool (optional): micro/metagenomics, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
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- 1.6. Sino-Nasal Outcome Test-22 Questionnaire (SNOT22), assessed visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).
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- 3.8. Bronchoscopy (optional): brush biopsy, bronchial biopsies and broncho-alveolar lavage (BAL) for transcriptome, protein, micro/metagenomics, cellular and structural analyses, assessed at visit 1 (week 0) and visit 4 (week 52).
- 3.9. Mucosal biopsies: histological analysis of cells and inflammatory mediators, assessed at visit 1 (week 0), visit 2 (week 4), visit 3 (week 16), visit 4 (week 52).

Overall study start date

01/03/2023

Completion date

31/12/2026

Eligibility

Key inclusion criteria

- 1. Adults (≥18 years old)
- 2. Clinical decision to initiate dupilumab for severe asthma after meeting licensing, local and national guidelines.
- 3. Be able to give valid written consent. Participants should have reasonable understanding of the English language (assessed by the research team)
- 4. Be compliant with study procedures and study visits.

Participant type(s)

Patient

Age group

Adult

Lower age limit

18 Years

Sex

Both

Target number of participants

150

Key exclusion criteria

- 1. Known hypersensitivity to the active substance of dupilumab or any of the excipients
- 2. Participation in an interventional clinical trial within 3 months of visit 1 or receipt of any investigational medicinal product within 3 months or 5 half-lives. Participation in other observational studies is acceptable if, in the view of the investigator, it will not impact the study outcomes.
- 3. Other clinically significant medical disease or uncontrolled concomitant disease that is likely, in the opinion of the investigator, to require a change in therapy or impact the ability to participate in the study.
- 4. Subjects on regular oral corticosteroids (OCS) and whereby the administration of dupilumab for OCS reduction will not be included in the study.

Date of first enrolment

31/08/2023

Date of final enrolment

31/12/2025

Locations

Countries of recruitment

England

Northern Ireland

Scotland

United Kingdom

Study participating centre
University Hospitals of Leicester NHS Trust
Glenfield Hospital
Groby Rd
Leicester

Leicester United Kingdom LE3 9QP

Study participating centre Manchester University NHS Foundation Trust

Cobbett House Oxford Road Manchester United Kingdom M13 9WL

Study participating centre NHS Greater Glasgow and Clyde

J B Russell House Gartnavel Royal Hospital 1055 Great Western Road Glasgow Glasgow United Kingdom G12 0XH

Study participating centre University Hospital Southampton NHS Foundation Trust

Southampton General Hospital Tremona Road Southampton United Kingdom SO16 6YD

Study participating centre Belfast Health and Social Care Trust

Trust Headquarters A Floor - Belfast City Hospital Lisburn Road Belfast United Kingdom BT9 7AB

Study participating centre Guy's and St Thomas' NHS Foundation Trust Sydney Street

London United Kingdom SW3 6NP

Study participating centre
Cambridge University Hospitals NHS Foundation Trust
Cambridge Biomedical Campus
Hills Road
Cambridge
United Kingdom
CB2 0QQ

Sponsor information

Organisation

University of Leicester

Sponsor details

Research & Enterprise Division Research Governance Office University of Leicester University Road Leicester England United Kingdom LE1 7RH +44 (0)116 373 6508 RGOsponsor@le.ac.uk

Sponsor type

University/education

Website

https://le.ac.uk/research/regi

ROR

https://ror.org/04h699437

Funder(s)

Funder type

Industry

Funder Name

Sanofi

Alternative Name(s)

sanofi-aventis, Sanofi US, Sanofi-Aventis U.S. LLC, Sanofi U.S.

Funding Body Type

Government organisation

Funding Body Subtype

For-profit companies (industry)

Location

United States of America

Results and Publications

Publication and dissemination plan

A publication plan will be written by the Trial Management Group (TMG) and the Patient and Public Involvement (PPI) group during the study with sponsor and funder approvals. It is envisaged that the results of the study will be published in newsletters and presented in public webinars for participants, lay media and relevant peer-reviewed journals. Individual responses to dupilumab will be provided by the local clinical teams to the participants as part of their standard of care.

Intention to publish date

31/08/2028

Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during this study will be included in the subsequent results publication.

IPD sharing plan summary

Published as a supplement to the results publication

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			26/07/2023	No	No