ISRCTN13657999 https://doi.org/10.1186/ISRCTN13657999

# A study to investigate human immune responses in lymph node cells before and after immunisation with a seasonal influenza vaccine in healthy adults with African or Asian ancestry

**Submission date**
09/08/2022

**Recruitment status**
No longer recruiting

**Registration date**
09/09/2022

**Overall study status**
Completed

**Last Edited**
10/01/2025

**Condition category**
Other

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

## Plain English summary of protocol

Background and study aims
We are researching how our ancestry and ethnic diversity influences the way we respond to vaccination. To do this we are sampling the cells that respond to a vaccine. These cells are in lymph nodes throughout the body including in the armpit. The data that we get from these cells will be used to create a reference dataset, called a single-cell atlas that will be shared to answer many research questions about vaccines and about the human immune system. In this study we are investigating the response to influenza (flu) vaccine.

Who can participate?
Healthy, adult volunteers with African or Asian ancestry, who have been mostly resident in the UK for at least 5 years.

What does the study involve?
The study involves 5 visits to the NIHR Imperial Clinical Research Facility at Hammersmith Hospital, London, UK. Participants have a seasonal influenza (flu) vaccine and will donate blood samples, and samples of lymph node cells from both armpits, both before and after vaccination.

What are the possible benefits and risks of taking part?
Participants will have a health check which might be a benefit, and they should get some immunity from the influenza vaccine. The study results will help research of the human immune system. Many people feel that it is rewarding to make this very personal contribution to science. There are risks associated with reactions to the influenza vaccine, and with the procedure to sample lymph node cells (by 'fine needle aspiration'), and with blood sampling.

Where is the study run from?
NIHR Imperial Clinical Research Facility (UK)

When is the study starting and how long is it expected to run for?
From July 2022 to December 2025

Who is funding the study?
The Chan Zuckerberg Initiative (USA)

Who is the main contact?
1. Dr Katrina Pollock, k.pollock@imperial.ac.uk
2. Mrs Aime Palomeras, aime.boakye@nhs.net

# Contact information

### Type(s)
Principal investigator

### Contact name
Dr Katrina Pollock

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### Type(s)
Scientific

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# Additional identifiers

### Integrated Research Application System (IRAS)
314444

### Central Portfolio Management System (CPMS)
52717

### Protocol serial number
22HH7619

# Study information

### Scientific Title
An experimental medicine study of seasonal influenza vaccination responses in Lymph nodE single-cell Genomics in AnCestrY (LEGACY01)

### Acronym
LEGACY01

### Study objectives
To investigate human immune responses in lymph node cells before and after immunisation with a seasonal influenza vaccine.

### Ethics approval required
Ethics approval required

### Ethics approval(s)
Approved 01/06/2022, London - Central Research Ethics Committee (3rd Floor Barlow House, 4 Minshull Street, Manchester , M1 3DZ, United Kingdom; +44 (0)207 104 8171; londoncentral.rec@hra.nhs.uk), ref: 22/LO/0343

Approved 01/06/2022, London - Central Research Ethics Committee (3rd Floor Barlow House, 4 Minshull Street, Manchester M1 3DZ; +44 (0)207 104 8171; londoncentral.rec@hra.nhs.uk), ref: 22/LO/0343

### Primary study design
Interventional

### Study design
Interventional non-randomized clinical study

### Study type(s)
Prevention

### Health condition(s) or problem(s) studied
Healthy volunteers receiving a seasonal influenza vaccine

### Interventions
The LEGACY01 study is an interventional clinical study in 30 healthy volunteers who will donate blood, and cells sampled from their lymph nodes, both before and after receipt of a seasonal influenza vaccine.

### Intervention Type
Biological/Vaccine

### Phase
Not Applicable

### Drug/device/biological/vaccine name(s)
Adjuvanted quadrivalent influenza vaccine (aQIV), also marketed as Fluad Tetra (Seqirus UK Ltd)

### Primary outcome(s)
Human immune responses measured using the following assays to generate a reference dataset :
1. Single-cell RNA sequencing analysis of lymph node cells (LNC) and matched paired peripheral blood mononuclear cells (PBMC) samples collected at baseline and at 5 days post-vaccination
2. Binding serum antibodies specific for influenza/A antigens (e.g. haemagglutinin) assays at baseline and at 5 and 28 days post-vaccination
3. Intracellular cytokine secretion or activation-induced marker assay of PBMC and LNC samples collected at baseline and at 5 and 28 days (PBMC only) post-vaccination
4. Genotypic assays such as HLA-testing at baseline

### Key secondary outcome(s)
There are no secondary outcome measures

### Completion date
31/12/2025

## Eligibility

### Key inclusion criteria
1. Healthy adults aged ≥18 years and ≤55 years on the day of screening
2. Willing and able to provide written informed consent
3. Identifies as having African or Asian ancestry
4. Usually resident in the UK for ≥5 years prior to screening
5. Not pregnant on the day of screening and willing to use a highly effective form of contraception until 12 weeks after the study immunisation, if a person of childbearing potential
6. Willing to avoid all other vaccines within 4 weeks either side of the study injection and fine needle aspiration
7. Willing and able to comply with the visit schedule and provide samples
8. Willing to grant authorised persons access to their trial related medical record and GP records either directly or indirectly

### Participant type(s)
Healthy volunteer

### Healthy volunteers allowed

No

## Age group
Adult

## Lower age limit
18 Years

## Upper age limit
55 Years

## Sex
All

## Total final enrolment
33

## Key exclusion criteria
1. Pregnant or lactating
2. Has a significant clinical history, physical finding on clinical examination or laboratory finding during screening, or presence of a disease that is active or requires treatment to control it, including cardiac, respiratory, endocrine, metabolic, autoimmune, liver, neurological, oncological, psychiatric, immunosuppressive/immunodeficient or other disorders which in the opinion of the investigator is not compatible with healthy status, may compromise the volunteer' s safety, preclude vaccination or tissue sampling or compromise interpretation of the immune response to vaccine. Individuals with mild/moderate, well-controlled comorbidities are allowed.
3. Body mass index (BMI) of ≥30
4. History of anaphylaxis or angioedema
5. History of severe or multiple allergies to drugs or pharmaceutical agents or contraindicated from receiving influenza vaccine or local anaesthetic including lidocaine.
6. History of severe local or general reaction to vaccination defined as:
6.1. Local:
6.1.1. Extensive, indurated redness and swelling involving most of the arm
6.1.2. Not resolving within 72 h
6.2. General:
6.2.1. Fever ≥39.5 °C within 48 h
6.2.2. Bronchospasm
6.2.3. Laryngeal oedema
6.2.4. Collapse
6.2.5. Convulsions or encephalopathy within 72 h
7. Receipt of any immunosuppressive agents within 18 weeks of screening by any route other than topical
8. Prescribed regular blood thinning medication likely to induce bruising or bleeding on fine needle aspiration
9. Detection of antibodies to hepatitis C
10. Detection of antibodies to HIV
11. Detection of anti-hepatitis B core antibodies
12. Participating in a clinical trial with an investigational drug or device or treated with an investigational drug within 28 days of screening

## Date of first enrolment

22/07/2022

**Date of final enrolment**
31/01/2024

# Locations

**Countries of recruitment**
United Kingdom

England

**Study participating centre**
**NIHR Imperial Clinical Research Facility**
Hammersmith Hospital
Du Cane Rd
Shepherd's Bush
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United Kingdom
W12 0HS

# Sponsor information

**Organisation**
Imperial College London

**ROR**
https://ror.org/041kmwe10

# Funder(s)

**Funder type**
Charity

**Funder Name**
Chan Zuckerberg Initiative

**Alternative Name(s)**
Chan Zuckerberg Initiative LLC, The Chan Zuckerberg Initiative, The Chan Zuckerberg Initiative, LLC, CZI

**Funding Body Type**

Private sector organisation

### Funding Body Subtype
Other non-profit organizations

### Location
United States of America

# Results and Publications

### Individual participant data (IPD) sharing plan
Raw data will be made available in public and managed-access repositories. The data will comprise the outputs of the immunological and transcriptomic analyses, along with a limited amount of 'meta data' such as the ancestry, sex and age of the donor, and their influenza vaccine status. Some data will be stored in the Human Cell Atlas - other data may be stored elsewhere (details to be confirmed). A persistent weblink, the process for requesting access, and timing for availability will be confirmed at a later date. Participant consent will be obtained, and the data will be linked-anonymised ('pseudonymised') - i.e. identified by the participants' study IDs.

### IPD sharing plan summary
Stored in publicly available repository, Stored in non-publicly available repository

### Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| HRA research summary | | | 28/06/2023 | No | No |
| Participant information sheet | version 2.0 | 19/05/2022 | 10/08/2022 | No | Yes |
| Participant information sheet | version 3.1 | 06/07/2023 | 10/01/2025 | No | Yes |
| Protocol file | version 2.0 | 19/05/2022 | 10/08/2022 | No | No |
| Protocol file | version 2.1 | 09/08/2022 | 10/01/2025 | No | No |
| Protocol file | version 3.1 | 06/07/2023 | 10/01/2025 | No | No |