



**Karolinska
Institutet**

Examensbevis | *Degree Certificate*

Medicine doktorsexamen

Degree of Doctor of Philosophy

Yuanhang Yang

19930827-8895

har i enlighet med bestämmelserna i högskoleförordningen (SFS 1993:100) om utbildning på forskarnivå avlagt Medicine doktorsexamen inom medicinsk vetenskap
has, in accordance with the Higher education ordinance (SFS 1993:100) concerning studies at the third cycle, been awarded Doctor of Philosophy (PhD) in Medical Science

den 24 februari 2025

24 February 2025

På rektors vägnar

On behalf of the President

Gunilla Hovén Malinowski

Examenshandläggare

Senior Administrative Officer

Kurser och betyg förtecknas på följande sidor.

Courses passed and grades obtained are indicated in the following pages.

Yuanhang Yang

Namn/Name

19930827-8895

Personnummer/Personal identity number

Kurs Course	Högskolepoäng Credits	Betyg Grade	Datum Date
Biostatistik I: Introduktion för epidemiologier* ¹ <i>Biostatistics I: Introduction for epidemiologists</i>	3.0	-	2021-03-29 ²
Biostatistik II: Logistisk regression för epidemiologier* ³ <i>Biostatistics II: Logistic Regression for Epidemiologists*</i>	2.0	-	2021-03-29 ²
Epidemiologi I: Introduktion till epidemiologi ⁴ <i>Epidemiology I: Introduction to Epidemiology</i>	1.5	-	2021-03-29 ²
Obligatorisk doktorandintroduktion* <i>Compulsory Introduction for Doctoral Students*</i>	0.0	Godkänd ⁵ Pass	2021-04-14
Kvalitetssäkring av klinisk forskning* <i>Quality Assurance of Clinical Research*</i>	1.5	Godkänd ⁵ Pass	2021-10-01
God datahanteringspraxis inom epidemiologisk forskning ⁶ <i>Good Data Management Practice in Epidemiological Research</i>	1.0	-	2021-10-14 ²
Biostatistik III: Överlevnadsanalys för epidemiologer <i>Biostatistics III: Survival Analysis for Epidemiologists</i>	1.5	Godkänd ⁵ Pass	2021-12-02
Epidemiologi II. Design av epidemiologiska studier <i>Epidemiology II. Design of Epidemiological Studies</i>	1.5	Godkänd ⁵ Pass	2021-12-21
Kausal inferens: att efterlikna en klinisk prövning i syfte att analysera jämförande effektivitet <i>Causal Inference: Emulating a Target Trial to Assess Comparative Effectiveness</i>	1.5	Godkänd ⁵ Pass	2022-04-01
Att kommunicera vetenskap i olika sammanhang med fokus på muntlig och visuell kommunikation* <i>To Communicate Science in Different Contexts with Focus on Oral and Visual Communication*</i>	3.0	Godkänd ⁵ Pass	2022-05-16
Deltagit i seminarier <i>Participation seminar series</i>	1.5	Godkänd ⁵ Pass	2023-02-23
18th Congress of ECCO. Muntlig presentation. 1-4 mars 2023, Köpenhamn, Danmark <i>18th Congress of ECCO. Oral presentation. March 1-4, 2023, Copenhagen, Denmark</i>	1.5	Godkänd ⁵ Pass	2023-03-04
Grundläggande statistisk genetik och datavisualisering <i>Fundamentals of Statistical Genetics and Data Visualization</i>	1.5	Godkänd ⁵ Pass	2023-03-31
Medicinsk Forskningsetik <i>Medical Research Ethics</i>	1.5	Godkänd ⁵ Pass	2023-04-12
Epidemiologi III. Analys och tolkning av epidemiologiska data <i>Epidemiology III. Analysis and Interpretation of Epidemiological Data</i>	1.5	Godkänd ⁵ Pass	2023-06-19
Fundamentala principer för statistisk modellering <i>Fundamentals of Statistical Modeling</i>	1.5	Godkänd ⁵ Pass	2023-06-28
Bioinformatisk analys och visualisering av medicinska genomikdata* <i>Bioinformatics Analysis and Visualisation of Medical Genomics Data*</i>	3.0	Godkänd ⁵ Pass	2023-10-17
Kausal inferens för epidemiologer <i>Causal Inference for Epidemiologists</i>	1.5	Godkänd ⁵ Pass	2023-12-15
Bemästra R – Avancerad datavetenskap och statistisk analys <i>Kursens engelska benämning Mastering R - Advanced Data Science and Statistical Analysis</i>	4.5	Godkänd ⁵ Pass	2024-01-08
19th Congress of ECCO. Muntlig presentation. 21-24 februari 2024, Stockholm, Sverige <i>19th Congress of ECCO. Oral presentation. February 21-24, 2024, Stockholm, Sweden</i>	1.5	Godkänd ⁵ Pass	2024-02-24
Forskningsarbete <i>Research work</i>		Godkänd ⁵ Pass	2025-02-21

Vetenskaplig avhandling
Research thesis

Epidemiological studies on the interplay between inflammatory bowel disease and kidney diseases

Framlagd: den 21 februari 2025

Presented: 21 February 2025

Noter/Notes

- 1 Tillgodoräknas från Advanced Statistical Topics in Health Research A; Advanced Statistical Topics in Health Research B 2,8 högskolepoäng och 2,8 högskolepoäng vid Københavns Universitet, Danmark enligt beslut dnr 3-1561/2021
Credited from Advanced Statistical Topics in Health Research A; Advanced Statistical Topics in Health Research B 2,8 credits and 2,8 credits at University of Copenhagen, Denmark, according to decision dnr 3-1561/2021
- 2 Beslutsdatum
Date of decision
- 3 Tillgodoräknas från Multilevel Statistical Modelling for Handling Recurrence, Randomized Block Designs and Clustered Data in Epidemiology 2,5 högskolepoäng vid Aalborg universitet, Danmark enligt beslut dnr 3-1564/2021
Credited from Multilevel Statistical Modelling for Handling Recurrence, Randomized Block Designs and Clustered Data in Epidemiology 2,5 credits at Aalborg University, Denmark, according to decision dnr 3-1564/2021
- 4 Tillgodoräknas från Advanced Social Epidemiology: A focus on Methodology, Context and Lifecourse 3,0 högskolepoäng vid Københavns Universitet, Danmark enligt beslut dnr 3-1562/2021
Credited from Advanced Social Epidemiology: A focus on Methodology, Context and Lifecourse 3,0 credits at University of Copenhagen, Denmark, according to decision dnr 3-1562/2021
- 5 Betygsskala: Godkänd (G)
Grading scale: Pass (G)
- 6 Tillgodoräknas från Good Data Management Practice in Epidemiological Research vid Karolinska institutet enligt beslut dnr 3-2821/2021
Credited from Good Data Management Practice in Epidemiological Research at Karolinska institutet, Sweden, according to decision dnr 3-2821/2021

Kursernas omfattning anges av poängtalet, varvid 60 högskolepoäng motsvarar ett års heltidsstudier.
Högskolepoäng motsvaras av ECTS-poäng (European Credit Transfer System).

*The scope of the courses is stated in terms of a credit system, whereby 60 credits correspond to one year of full-time studies.
The system is compatible with ECTS credits (the European Credit Transfer System).*

DIPLOMA SUPPLEMENT

The purpose of the Diploma Supplement is to provide sufficient independent data to improve the international “transparency” and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It is free from any value judgements, equivalence statements or suggestions about recognition. This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO.

1. Information identifying the holder of the qualification

- 1.1 Last name(s)** Yang
- 1.2 First name(s)** Yuanhang
- 1.3 Date of birth (dd/mm/yy)** 27 August 1993
- 1.4 Student identification number or code (if available)** 19930827-8895

2. Information identifying the qualification

- 2.1 Name of qualification and (if applicable) title conferred (in original language)**
Medicine doktorsexamen (Degree of Doctor of Philosophy)
- 2.2 Main field(s) of study for the qualification**
MEDICAL SCIENCE
- 2.3 Name and status of awarding institution (in original language)**
Karolinska institutet (Karolinska institutet).
State recognised university.
- 2.4 Name and status of institution (if different from 2.3) administering studies (in original language)**
Not applicable.
- 2.5 Language(s) of instruction/examination**
English.

3. Information on the level and duration of the qualification

- 3.1 Level of the qualification**
Forskarnivå/Third-cycle QF-EHEA SeQF 8/EQF 8. For information on the Swedish higher education system, see section 8.
- 3.2 Official duration of programme in credits and/or years**
240 högskolepoäng (credits)/240 ECTS. Duration of 4 years of full-time studies. A normal 40-week academic year corresponds to 60 credits (högskolepoäng). One credit corresponds to 1 ECTS credit.
- 3.3 Access requirement(s)**
There are general and (additional) specific entry requirements that should be fulfilled for access to higher education within all cycles. The general entry requirements for third-cycle studies are a second-cycle qualification, or completed courses worth at least 240 credits (of which 60 credits are at second-cycle level) or the equivalent level of knowledge acquired in Sweden or abroad.

4. Information on the programme completed and the results obtained

- 4.1 Mode of study**
Full-time equivalent.
- 4.2 Programme learning outcomes**
The Swedish Higher Education Act takes account of 1) courses and study programmes based on scholarship or artistic practice and on proven experience, and 2) research and artistic research as well as development work. Reference to research below also applies to artistic research.

According to the Swedish Higher Education Act, third-cycle courses and study programmes shall be based fundamentally on the knowledge acquired by students in first- and second-cycle courses and study programmes, or its equivalent. In addition, third-cycle study programmes shall develop the knowledge and skills required to be able to undertake autonomous research. (For further information, see The Swedish Higher Education Act and The Higher Education Degree Ordinance: www.uhr.se/en)

It is required that in order to receive a Degree of Doctor from Karolinska institutet, the doctorate must have: carried out at least half the doctoral education at one of Karolinska institutet's departments, undergone a halftime review at Karolinska institutet, or taken a licentiate degree in the same subject area and has been admitted to doctoral education at Karolinska institutet, and fulfilled the prerequisites for a doctorate in accordance with the general study plan for which the doctoral student was accepted.

4.3 Programme details, individual credits gained and grades/marks obtained

A Degree of Doctor is awarded after the third-cycle student has completed a study programme of 240 credits in a subject in which third-cycle teaching is offered.

For the Degree of Doctor the third-cycle student shall have been awarded a pass grade for a research thesis (doctoral thesis) of at least 120 credits.

For more information, see Degree Certificate/Official Transcript.

4.4 Grading system and, if available, grade distribution table

There is no national grading system in Sweden. Higher education institutions may determine which grading system is to be used. For more information, see Degree Certificate/Official Transcript.

4.5 Overall classification of the qualification (in original language)

Not applicable for Swedish qualifications, since no overall grade is awarded for a degree and students are not ranked. For example, Grade Point Average (GPA) and other ranking systems are not used in Sweden.

5. Information on the function of the qualification

5.1 Access to further study

Not applicable. Doktorsexamen is the highest degree in the Swedish higher education system.

5.2 Access to a regulated profession (if applicable)

Not applicable.

6. Additional information

6.1 Additional information

None.

6.2 Further information sources

Karolinska Institutet, SE-171 77 Stockholm, Sweden, www.ki.se

You can verify the issued qualification by logging on to Ladok, the Swedish national student registry. For this you need a unique code provided by the student.

The Swedish Council for Higher Education (Universitets- och högskolerådet) has been commissioned to act as the Swedish NARIC and is also part of ENIC. The ENIC-NARIC office provides information on education in Sweden. Please see: <http://www.uhr.se>

For information on Professional Qualifications Directive, Swedish National Assistance Centre for the Recognition of Professional Qualifications (Professional Qualifications Directive 2005/36/EC): pqinfo@uhr.se

For information on quality assurance, Swedish Higher Education Authority: <http://english.uka.se>

7. Certification of the supplement

7.1 Date 24 February 2025

7.2 Signature

This document has an electronic stamp. For information on how to verify the document, see last page.

7.3 Capacity Not applicable.

7.4 Official stamp or seal

Not applicable.

8. Information on the national higher education system

The following description is approved by the Swedish Council for Higher Education.

The Swedish higher education system is based on The Swedish Higher Education Act (SFS 1992:1434) and the 1 January 2007 amendments to The Higher Education Ordinance (1993:100). The following description is a short summary based on the legislation regulating the Swedish higher education system.

Qualifications from all higher education institutions (universities, university colleges and independent higher education providers) that are recognized by the Government are of equal official value. The same legislation governs all state higher education institutions. All Swedish degrees are issued in accordance with the same degree ordinances.

Quality assurance

The Swedish Higher Education Authority (UKÄ), a member of the European Association for Quality Assurance in Higher Education (ENQA), has been responsible for the quality assurance system for all higher education since 1 January 2013. Before 2013 The Swedish National Agency for Higher Education was the responsible agency. For more information, please visit www.uka.se. Evaluation reports are available to the public.

National Qualifications Framework

The Swedish Higher Education Act and The Higher Education Ordinance have been amended in accordance with the agreements reached as part of the Bologna Process, including the Qualifications Frameworks in the European Higher Education Area (QF-EHEA). Legislation for a three-cycle structure of higher education started to apply in July 2007, and is now the only one in use in all Swedish higher education. Transitional provisions apply to courses and programmes that started prior to this. For more information, please visit www.uhr.se/en or www.enic-naric.net.

In 2015, the Swedish Government decided on a national qualifications framework (SeQF), based on the European Qualifications Framework for Lifelong Learning (EQF). The SeQF has eight levels that are in accordance with the EQF levels. Higher education qualifications are at levels six to eight. For more information, please visit www.seqf.se.

Credit system

Sweden has a system of credits (högskolepoäng, hp); a normal 40-week academic year corresponds to 60 credits. The system is compatible with European Credit Transfer System (ECTS) credits.

Grading system

There is no national grading system in Sweden. Higher education institutions may determine which grading system is to be used. No overall grade is awarded for a degree and students are not ranked. For example, Grade Point Average (GPA) and other ranking systems are not used in Sweden.

Access and admission

There are general and specific entry requirements for access to higher education within all cycles. The specific entry requirements vary according to the field of higher education and should be essential for students to be able to benefit from the course or study programme. The number of places is limited on all study programmes and courses.

The general entry requirements for first-cycle studies are the same for all higher education. General entry requirements can be attained by completing an upper-secondary school programme, via adult education at upper-secondary school level or the applicants achieving a comparable level of learning outcomes through other education, practical experience or other circumstances.

The general entry requirements for second-cycle studies are a first-cycle qualification of at least 180 credits, or a corresponding foreign qualification. An applicant may also be accepted on the basis of a comparable level of learning outcomes obtained through other education, practical experience or other circumstances. The general entry requirements for some specific second-cycle professional qualifications are a prior specific qualification or a specific professional registration.

The general entry requirements for third-cycle studies are a second-cycle qualification, or completed courses worth at least 240 credits (of which 60 credits are at second-cycle level) or the equivalent level of knowledge acquired in Sweden or abroad.

Qualifications

All courses, study programmes and qualifications are on one of three levels: first-, second- or third-cycle. In The Higher Education Ordinance, the Government has determined which qualifications may be awarded, as well as their scope, requirements and intended learning outcomes. There are three categories of qualifications: general; the fine, applied and performing arts; and professional qualifications. For some more information, please see below.

General qualifications

First-cycle (SeQF/EQF 6)

Högskoleexamen (Higher Education Diploma) requires 120 credits and an independent project (degree project).

Kandidatexamen (Degree of Bachelor) requires 180 credits. At least 90 credits must be completed in the main field of study, including an independent project (degree project) worth 15 credits.

Second-cycle (SeQF/EQF 7)

Magisterexamen (Degree of Master, 60 credits) requires 60 credits. At least 30 credits must be completed in the main field of study, including an independent project (degree project) worth 15 credits. In addition, the student must normally hold a kandidatexamen, or a professional degree of at least 180 credits, or an equivalent foreign degree.

Masterexamen (Degree of Master, 120 credits) requires 120 credits. At least 60 credits must be completed in the main field of study, including an independent project (degree project) worth at least 30 credits. In addition, the student must normally hold a kandidatexamen, or a professional degree of at least 180 credits or an equivalent foreign degree.

Third-cycle (SeQF/EQF 8)

Licentiatexamen (Degree of Licentiate) requires at least 120 credits, including a research thesis worth at least 60 credits. A higher education institution may decide that a licentiatexamen can be awarded as a separate qualification or as a step on the way to doktorexamen (see below).

Doktorexamen (Degree of Doctor) requires 240 credits, including a research thesis (doctoral thesis) worth at least 120 credits. The thesis must be presented at a public defence.

Qualifications in the fine, applied and performing arts

Qualifications in the fine, applied and performing arts are awarded at all three cycles and corresponding SeQF levels. At first-cycle level: konstnärlig högskoleexamen (Higher Education Diploma) and konstnärlig kandidatexamen (Degree of Bachelor of Fine Arts). At second-cycle level: konstnärlig magisterexamen (Degree of Master of Fine Arts, 60 credits) and konstnärlig masterexamen (Degree of Master of Fine Arts, 120 credits). Two third-cycle qualifications are awarded: konstnärlig licentiatexamen (Degree of Licentiate) and konstnärlig doktorexamen (Degree of Doctor).

Professional qualifications

Professional qualifications are offered at either first- or second-cycle level and corresponding SeQF levels. These qualifications may stretch over two cycles and are awarded in areas that include engineering, health care, agriculture, law, and education. Professional qualifications are regulated by national legislation and are considered regulated education subject to the Professional Qualifications Directive 2005/36/EC.

Titles of qualifications

Translations into English of all titles of qualifications are regulated at the national level. Higher education institutions may decide to add a prefix to a qualification title (for example "filosofie kandidatexamen") and add a major field of studies (for example "civilingenjörsexamen i maskinteknik").

	QUALIFICATIONS	SeQF	EQF	Bologna
Forskarnivå (third-cycle)	General Qualifications Doktorexamen (Degree of Doctor), 240 hp/ECTS credits Licentiatexamen (Degree of Licentiate), 120 hp/ECTS credits	8	8	3
	Qualifications in the fine, applied and performing arts Konstnärlig doktorexamen (Degree of Doctor), 240 hp/ECTS credits Konstnärlig licentiatexamen (Degree of Licentiate), 120 hp/ECTS credits			

	QUALIFICATIONS	SeQF	EQF	Bologna
Avancerad nivå (second-cycle)	<p>General Qualifications Masterexamen (Degree of Master, 120 credits), 120 hp/ECTS credits Magisterexamen (Degree of Master, 60 credits), 60 hp/ECTS credits</p> <p>Qualifications in the fine, applied and performing arts Konstnärlig masterexamen (Degree of Master of Fine Arts, 120 credits), 120 hp/ECTS credits Konstnärlig magisterexamen (Degree of Master of Fine Arts, 60 credits), 60 hp/ECTS credits</p> <p>Professional qualifications Degree of Master*, 60 hp/ECTS credits, 240–360 hp/ECTS credits Postgraduate Diploma*, 60–90 hp/ECTS credits</p> <p>*Degrees and diplomas within different professional fields.</p>	7	7	2
Grundnivå (first-cycle)	<p>General Qualifications Kandidatexamen (Degree of Bachelor), 180 hp/ECTS credits Högskoleexamen (Higher Education Diploma), 120 hp/ECTS credits</p> <p>Qualifications in the fine, applied and performing arts Konstnärlig kandidatexamen (Degree of Bachelor of Fine Arts), 180 hp/ECTS credits Konstnärlig högskoleexamen (Higher Education Diploma), 120 hp/ECTS credits</p> <p>Professional qualifications Degree of Bachelor*, 180–210 hp/ECTS credits Higher Education Certificate*, 60 hp/ECTS credits</p> <p>*Degrees, diplomas and certificates within different professional fields.</p>	6	6	1



E-stämplat dokument *E-stamped document*

Digitalt beslut om examen

Beslut om examen har fattats digitalt i Ladok. Detta dokument är en representation av beslutet och innehåller all information som ingår i beslutet, samt beslutsfattare och beslutsdatum. Beslutet sparas i Ladok och studenten kan hämta sitt examensbevis utifrån det beslut som finns sparad.

Verifiera dokument

Examensbeviset är e-stämplat. Det betyder att du som mottagare av dokumentet kan kontrollera att det inte har ändrats sedan hämtningen från Ladok. Detta gör du genom att ladda upp det mottagna dokumentet på Ladoks sida för verifiering: www.student.ladok.se/student/verifiera-dokument. Ladok intygar då om dokumentet du har laddat upp är identiskt med det som studenten hämtade. Det är också möjligt att verifiera e-stämpeln via etablerade pdf-läsare. E-stämpeln är giltig i två år från det att beviset hämtas.

Kontrollera beslutet om examen

Förutom att verifiera dokumentet går det även att kontrollera själva beslutet om examen direkt emot Ladok: www.student.ladok.se/student/kontrollera. För att du ska kunna göra det behöver studenten förmedla en kontrollkod till dig.

Digital decision on qualification

Decision on qualification has been made digitally in Ladok. This document is a representation of the decision and contains all information included in the decision, decision-maker and decision date. The decision is digitally stored in Ladok and the student can download his or her degree certificate based on the saved decision.

Verify the document

The degree certificate is e-stamped. This means that you, as recipient of the document, can control that it has not been changed since downloaded from Ladok. You do this by uploading the received document on Ladok's page for verifying the document: www.student.ladok.se/student/verifiera-dokument/en. Ladok will then verify if the document you have uploaded is identical to the one downloaded by the student. It is also possible to verify the e-stamp by using established PDF readers. The e-stamp is valid for two years from the date the certificate is retrieved.

Control the decision on qualification

In addition to verifying the document it is also possible to check the actual decision on qualification directly against Ladok: www.student.ladok.se/student/kontrollera/en. To do this, the student needs to provide you with a control code.