

# BL4215 Bacterial Virulence Factors

(BL4215 online module handbook version 34)

**Credits:** 15

**Semester:** 1

**Module Organiser**

Dr Uli Schwarz-Linek  
[us6@st-andrews.ac.uk](mailto:us6@st-andrews.ac.uk)  
01334 467188

**Pre-requisite Modules:**

Before taking this module  
you must pass BL3301

**Anti-requisite Modules:**

**Post-requisite Modules:**

**Additional Module**

**Information:**

[Please check MMS regularly  
for additional module  
information](#)

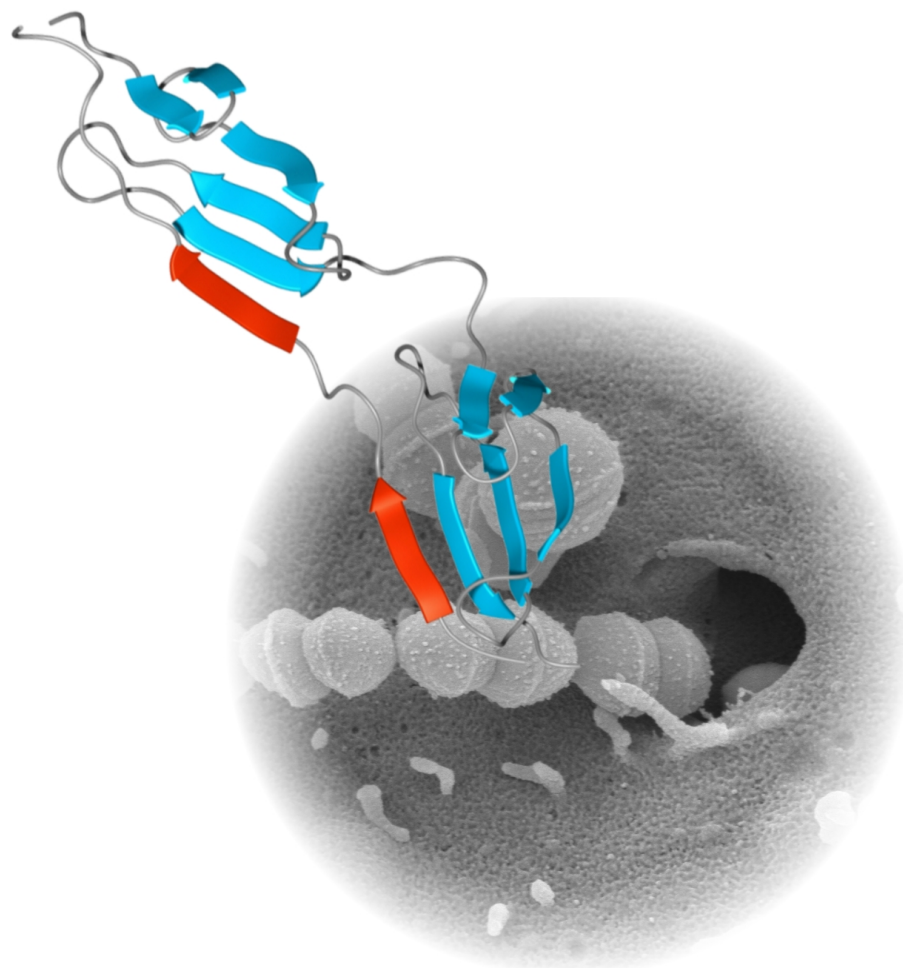


image: Fibronectin-mediated *Streptococcus pyogenes* invasion of a host cell.

In order to establish an infection in a host, pathogenic bacteria rely on mechanisms to adhere to host tissue, gain entry into cells, escape the host's immune response and spread and survive within or on the host. These processes are mediated by bacterial virulence factors, i.e. proteins and other bacterial products that utilise and subvert diverse host cellular processes for the benefit of the pathogen. In this module students will explore how structural biology has led to significant breakthroughs in understanding the molecular bases of some important bacterial infections.

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[BL4215View content for BL4215 \(2023/4\) in the Module Management System \(MMS\)](#)

[View the current Biology Online Module Catalogue for BL4215](#)



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# BL4215: Timetable

**Legend** (not all modules have every event type):

lecture	tutorial	workshop	practical	other
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## Semester 1: Week 1

DATE & TIME	VENUE	STAFF	EVENT
Monday 11-09-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L1: <b>Module introduction</b> <a href="#">2023-4_BL4215_L1</a>

## Semester 1: Week 2

DATE & TIME	VENUE	STAFF	EVENT
Monday 18-09-2023 16:00 to 17:00	Biomedical Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L2: <b>Why study virulence factors?</b> <a href="#">2023-4_BL4215_L2</a>

## Semester 1: Week 3

DATE & TIME	VENUE	STAFF	EVENT
Monday 25-09-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L3: <b>Bacterial secretion systems</b> <a href="#">2023-4_BL4215_L3</a>

## Semester 1: Week 4

DATE & TIME	VENUE	STAFF	EVENT
Monday 02-10-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L4: <b>Phagocytosis and invasion I</b> <a href="#">2023-4_BL4215_L4</a>
Thursday 05-10-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L5: <b>Phagocytosis and invasion II</b> <a href="#">2023-4_BL4215_L5</a>

## Semester 1: Week 5

DATE & TIME	VENUE	STAFF	EVENT
Monday 09-10-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L6: <b>Pili I</b> <a href="#">2023-4_BL4215_L6</a>
Thursday 12-10-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L7: <b>Pili II</b> <a href="#">2023-4_BL4215_L7</a>

## Semester 1: Week 7

DATE & TIME	VENUE	STAFF	EVENT
Monday 23-10-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Lecture L8: <b>TIE proteins: chemical harpoons</b> <a href="#">2023-4_BL4215_L8</a>
Thursday 26-10-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Tutorial T1: <b>Twitter threads and blogs</b> <a href="#">2023-4_BL4215_T1</a>

## Semester 1: Week 8

DATE & TIME	VENUE	STAFF	EVENT
Thursday 02-11-2023 16:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Other O1: <b>reserve time slot</b> <a href="#">2023-4_BL4215_O1</a>

## Semester 1: Week 10

DATE & TIME	VENUE	STAFF	EVENT
Monday 13-11-2023 14:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Other O2: <b>Student presentations I</b> <a href="#">2023-4_BL4215_O2</a>

Wednesday 15-11-2023 14:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Other O3: <b>Student presentations II</b> <small>2023-4, BL4215_03</small>
Thursday 16-11-2023 14:00 to 17:00	Biomolecular Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Other O4: <b>Student presentations III</b> <small>2023-4, BL4215_04</small>
Friday 17-11-2023 14:00 to 17:00	Biomedical Sciences Building Lecture Theatre	<a href="#">Dr Uli Schwarz-Linek</a> -	Other O5: <b>Student presentations IV</b> <small>2023-4, BL4215_05</small>

# BL4215: Reading List

[BL4215Click for BL4215 reading list](#)

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## BL4215: Assessment

Coursework = 100%

[BL4215View coursework assessment details for BL4215 \(2023/4\) in MMS](#)

The following related information applies to all Biology modules:

School of Biology Marking Criteria:	See <a href="#">JH booklet info (st-andrews.ac.uk)</a>
Late submission of continuous assessment work:	All late submissions of coursework that do not require electronic submission should be made via the Biology Teaching Office, Level 2, BMS Building, North Haugh.
Exam details:	See School of Biology UG Handbook <a href="#">JH booklet info (st-andrews.ac.uk)</a> : All Biology exams will be conducted online for 2022-23.
Exam timetable:	See <a href="#">Timetables - Exams - University of St Andrews (st-andrews.ac.uk)</a>
Expected attendance:	See <a href="#">JH booklet info (st-andrews.ac.uk)</a> for detailed attendance requirements.
Good Academic Practice & Avoiding Academic Misconduct:	See <a href="#">JH booklet info (st-andrews.ac.uk)</a>
University Student Handbook:	<a href="#">University Student Handbook</a>
School and University regulations in the School and University Undergraduate Handbook relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, good academic practice and Academic Alerts.:	<a href="#">JH booklet info (st-andrews.ac.uk)</a> <a href="#">University Student Handbook</a>

# Who to ask

(Information in this section applies to all Biology Modules)

**Before contacting staff**, students should check the content of the Biology Undergraduate Handbook, the module handbook and specific task instructions.

## Questions about

General teaching matters  
Rescheduled or cancelled events  
Lecture or practical content  
Completing assessed practical assignments  
Completing assessments  
Marking on continuous assessment  
Marking on exams  
Rearranging practical days  
Absence and/or extensions  
Difficulties with academic progress which impact more than one module:  
Overall performance, progress or future directions:  
Disability:  
For advice and support on any issue e.g. academic, financial, international, personal or health matters, or if you are unsure of who to go to for help:

## University assistance with urgent matters out of office hours:

## Contact

Biology Teaching Office ( [bioteach@st-andrews.ac.uk](mailto:bioteach@st-andrews.ac.uk) )  
Check your University email  
The lecturer who presented the material  
The lecturer who set the assignment  
Module Organiser ( [Dr Uli Schwarz-Linek us6@st-andrews.ac.uk](mailto:Dr Uli Schwarz-Linek us6@st-andrews.ac.uk) )  
The Demonstrator or Module Organiser ( [Dr Uli Schwarz-Linek us6@st-andrews.ac.uk](mailto:Dr Uli Schwarz-Linek us6@st-andrews.ac.uk) )  
Module Organiser ( [Dr Uli Schwarz-Linek us6@st-andrews.ac.uk](mailto:Dr Uli Schwarz-Linek us6@st-andrews.ac.uk) )  
Module Organiser ( [Dr Uli Schwarz-Linek us6@st-andrews.ac.uk](mailto:Dr Uli Schwarz-Linek us6@st-andrews.ac.uk) )  
Module Organiser ( [Dr Uli Schwarz-Linek us6@st-andrews.ac.uk](mailto:Dr Uli Schwarz-Linek us6@st-andrews.ac.uk) ) **and** the Biology Teaching Office ( [bioteach@st-andrews.ac.uk](mailto:bioteach@st-andrews.ac.uk) )  
Year Coordinator  
See School of Biology UG Handbook for list: [JH booklet info \(st-andrews.ac.uk\)](http://www.st-andrews.ac.uk/jh-booklet-info)  
Advisor of Studies  
Disability Coordinator ( [biodisabilities@st-andrews.ac.uk](mailto:biodisabilities@st-andrews.ac.uk) )  
Advice & Support Centre  
Address: 79 North Street, St Andrews  
Email: [theasc@st-andrews.ac.uk](mailto:theasc@st-andrews.ac.uk)  
Web: <https://www.standrews.ac.uk/ask-a-question/>  
Tel: 01334 462020  
Tel: 01334 476161  
Web: <https://www.st-andrews.ac.uk/students/advice/counselling/incrisis/>

## Biology Teaching Office:

We are happy to hear from you about teaching matters. The School of Biology Teaching Office is open Monday to Friday 09.00 - 13.00 and 14.00 - 17.00. School of Biology staff will respond to your emails during these hours. Our team will provide a response to you within three working days.

Biology Teaching Office (Level 2), University of St Andrews, Biomolecular Sciences Building, North Haugh, St Andrews, Fife KY16 9ST

Email: [bioteach@st-andrews.ac.uk](mailto:bioteach@st-andrews.ac.uk)

Tel: 01334 46 3602 or 3566

## BL4215: Contributing Staff

**[Dr Uli Schwarz-Linek](#)**  
**(Module Organiser)**

Senior Lecturer

[us6@st-andrews.ac.uk](mailto:us6@st-andrews.ac.uk)

[Dr Uli Schwarz-Linek](#)  
(Module Organiser)

Senior Lecturer

[us6@st-andrews.ac.uk](mailto:us6@st-andrews.ac.uk)



## **BL4215: Learning Outcomes**

This module is an introduction to the molecular basis of bacterial virulence. It aims to impart an appreciation of the role of molecular and structural biology in infectious disease research.

Students completing module BL4215 successfully should be able to:

- Definition and classes of bacterial virulence factors
- Appreciate the role of structural biology in understanding bacterial pathogenicity
- Understand the function and mechanisms of Gram-negative secretion systems
- Learn how bacterial surface-associated proteins trigger or prevent phagocytosis
- Gain insights into the latest findings regarding structure and function of bacterial pili and adhesins

# **BL4215: Acquired Skills**

## **Practical Skills**

## **Transferable Skills**

- Long individual presentation on given topic (>15 min)
- Long essay (>2000 words)
- Science journalism piece aimed at general audience
- Finding literature
- Referencing
- Searching databases
- Peer assessment

# Policies

(Information in this section applies to all Biology Modules)

- The procedures and regulations followed by the School of Biology are outlined in the [University Handbook](#) and in the School of Biology UG handbook [JH booklet info \(st-andrews.ac.uk\)](#)
- All coursework associated with the module must be completed and submitted by its due date.
- Specific School regulations relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, Good Academic Practice and Academic Alert are stated in the School of Biology UG handbook [JH booklet info \(st-andrews.ac.uk\)](#) and students are required to carefully read these regulations.
- Students are also referred to the University Handbook, available at: <http://www.st-andrews.ac.uk/studenthandbook/>