

Exploring ancient Welsh texts for antimicrobials

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Antimicrobials

- Resistance to antibacterials and antifungals is a global problem
- Very few novel antimicrobials developed in the past years
- Full efficacy of a reconstructed 10th century approach (recipe for an eyesalve from Bald's Leechbook) to treat infections, *incl MRSA in mouse chronic wound model*, required combination of ingredients, each containing some antibacterial activity (Harrison et al. 2015)
- Sophistication of ancient medical practitioners and pharmacists
- Ancient knowledge as a source of novel natural products for drug discovery

Redesigning Resilience

- Welsh Crucible-funded project bringing interdisciplinary researchers together from across Welsh HEIs and other organisation:
 - **Biochemistry**: Dr Geertje van Keulen (PI), Swansea University (Lead)
 - **Welsh & Celtic Studies**: Dr Diana Luft, University of Wales
 - **Microbiology**: Dr Rowena Jenkins, Cardiff Metropolitan University
 - **Public health**: Dr Tom Powell, Bevan Commission
 - **Human geography**: Dr Rhys Dafydd Jones, Aberystwyth University
 - **Marine Biology**: Dr Stephanie Wilson, Bangor University
 - **Oceanography**: Dr Matt Lewis, Bangor University





Redesigning Resilience - Objectives

- (i) Explore the newly translated corpus of medieval Welsh medical and other historical texts*
- (ii) Redesign antimicrobial remedies that have modern day pharmaceutical potential, especially to treat resistant (wound) infections;*
- (iii) Identify referrals to coastal flora and fauna in remedies and societal use, e.g. food, to allow tracking of climatic events over time or to mitigate risk; and*
- (iv) Identify detrimental public health and environmental events alongside practitioner responses, and societal resilience including migration.*

Redesigning Resilience—Sources and Translations



Oxford Jesus College MS. 111 page f. 231r

- ‘the Red Book of Hergest’ 1382
- Written for patron Hopcyn ap Thomas of Ynysforgan by the known scribe Hywel Fychan of Builth
- Contains famous ascription of the texts to the Physicians of Myddfai
- Book covers vast collection of varied prose and poetical texts
- Further new translations are from other dedicated medical manuscripts

Redesigning Resilience—Sources and Translations



Oxford Bodleian Rawlinson MS. B467 page 11v

- Welsh manuscript dating to 1350~1400
- Describes qualities of different foods, itself copied from a text originating at the medical school of Salerno in Italy
- A later user, perhaps writing in the 15th century, has added a comment in the bottom margin, a possible clarification on the nature of the different types of olive oil

Redesigning Resilience—Sources and Translations



National Library of Wales MS. 3026 p11

- Only medieval Welsh medical manuscript with images, dating to 1488-9
- Illustrates position of the different veins on the body and
- Indicates the places on the body which should be bled in order to treat specific ailments

Redesigning Resilience—Sources and Translations



National Library of Wales MS. 3026 p26

- Only medieval Welsh medical manuscript with images, dating to 1488-9
- ‘Zodiac man’
- Assigns zodiac signs to body parts, starting with ‘Aries’ (ram) for the head (new year started in March)
- No letting of blood from area when zodiac sign is active

Redesigning Resilience—Sources and Translations



National Library of Wales MS. 3026 p28

- Only medieval Welsh medical manuscript with images, dating to 1488-9
- Urine wheel
- Indicates different colours for the urine of a patient's and
- Links each colour to a possible disease

Redesigning Resilience—Sources and Translations



Oxford Jesus College MS. 111 Disease/Recipe 26 (translation and interpretations in Book 3 by Diana Luft ©2017)

- 9. Tri ryw ysceueint yssyd: ysceuein hwst, a gwynn ysceuein, a du ysceuein. Llymma yr argoylon nessaf eu bot o’r gwyn ysgeuein: gwayw dan y vronn a than balueis ac ym penn yr yscwyd, a choc[hi y deurud]. Ac val hynn y medigineithir: kymer tridieu goduc o’r llysseu hyn:
- English translation and interpretation removed for copyright reasons
- Footnote
 - removed for copyright reasons



Redesigning Resilience—Sources and Translations

Translations and interpretations in Book 4 by Diana Luft ©2017)

- Eclectic collection of different types of information based on different sources.
- Simple and compound recipes for treating common ailments such as:
 - toothache, headache, worms, diarrhoea, epilepsy, abscesses and pustules,
 - women's diseases, such as excessive menstruation and uterine prolapse, and
 - items of preventative medicine (how to maintain happiness, how to avoid drunkenness, etc.).
- 15. Gwreid y **drycheigyauc** y torri yr hychgruc, y taraw arr dwfyr oer a'e yvet, a chronni hwnnw yn y eneu.
- English translation and interpretation removed for copyright reasons
- Footnote
 - removed for copyright reasons

Redesigning Resilience—Sources and Translations



Translations and interpretations in Book 10 by Diana Luft ©2017)

- This collection deals with
 - headache,
 - healing different types of wounds and broken bones,
 - recipes for staunching blood,
 - relieving swelling,
 - opening and cleaning wounds,
 - removing iron wood and bone fragments from wounds,
 - removing dead flesh,
 - treating pain and fevers in wounds,
 - diagnosing different types of festers and indicating how to differentiate a festering wound from a cancerous one.
 - And finally treatments for cancer, gout, piles, wind, and hair loss.

Redesigning Resilience

- So far 9 Books available with original transcripts of Welsh and modern English translations by Diana Luft
- Modern interpretations of sources and ingredients, from common and renamed herbs/plants to animal-derived, eg peacock droppings, billy goat fat
- Extraction methods clear and also vague, will need trialling and optimisation for each recipe, with focus on screening for antibacterial activities (other targets welcome).
- Other materials digitised and available via e.g. National Library of Wales
- Recording and interpretation of marine/coastal occurrences/events and migration patterns

Interested?

- Join our **FREE Redesigning Resilience Collaboration Workshop** in Myddfai Centre (Carmarthenshire) on July 4-5th 2017:
 - Registration via <https://www.eventbrite.co.uk/e/redesigning-resilience-workshop-tickets-33891647831>
 - Keynote speaker: **Dr Freya Harrison** (Warwick University) – Ancientbiotics
 - Keynote speaker: **Prof Richard Marggraf Turley** (Aberystwyth University) – Arts, sciences and public imagination
 - Submission deadline for presentation abstracts June 13th
 - (Limited) funding for travel and accommodation available
- Email Dr Rowena Jenkins rojenkins@cardiffmet.ac.uk for Workshop info, funding and abstract submission
- Email Dr Geertje van Keulen g.van.Keulen@swansea.ac.uk TWITTER **@DrGvanK** for general project information, progress, collaboration/funding/sponsoring queries

