Harnessing the power of veterinary cancer registries in veterinary care

ACARCinom
IMPROVING PET CARE THROUGH CANCER DATA

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When you first think about cancer data… what comes to mind? What is your gut feeling?

"What’s the point of spending hours for extracting and re-organising data?”

Behind every data point is a person

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Beyond the clinic: Unlocking the power of cancer data in companion animals

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Cancer data isn't meaningless. It’s powerful.

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
Cancer data are critical for
CANCER SURVEILLANCE

Cancer data are also critical for CANCER PREVENTION

International Agency for Research on Cancer
World Health Organization

GLOBAL CANCER OBSERVATORY

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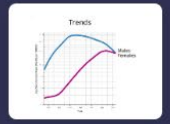
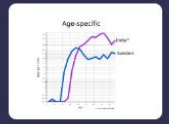
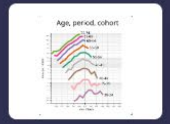
CANCER OVER TIME

Cancer Over Time

Predict the future cancer incidence and mortality burden worldwide up until 2040.







CANCER TODAY | CANCER OVER TIME | CANCER TOMORROW | CANCER CAUSES | CANCER SURVIVAL | CANCER @CSU

https://gco.iarc.fr/en

Translated to the veterinary field….
What cancer data can tell us?

- Tumour types and breed predispositions
- Age, sex, and lifestyle risk factors
- Treatment effectiveness over time

It’s not just data collection — it’s **data activation**.

Cancer data are critical for CANCER EPIDEMIOLOGY studies
Our pets don’t just live with us. They live *like* us.

Pollution and Environmental Cancer Causes

By Scott Nichols, MS, DVM

Medically Reviewed by Stephanie Evenson, DVM, MS, cVMA

updated on January 29, 2024 | read time is about 5 minutes

Nowadays, humans and dogs share their living space and so our pets are exposed to many of the same environmental pollutants as we are, like tobo smoke, smog, paints and pesticides. Fortunately, our pets' risk is reduced w we take steps to reduce our own risk of exposure, and the incidence of can in pets from pollution is still very low.

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Dogs exposed to household chemicals more likely to get cancer, study finds

Markers of bladder cancer found in canines with higher levels of exposure to chemicals such as flame retardants

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ELSEVIER

Environmental exposure and cancer occurrence in dogs: a critical appraisal of evidence.

Kei Owada [a,1], Emma Nicholls [b,1], Ricardo J. Soares Magalhães [a,c], Chiara Palmieri [b,*]

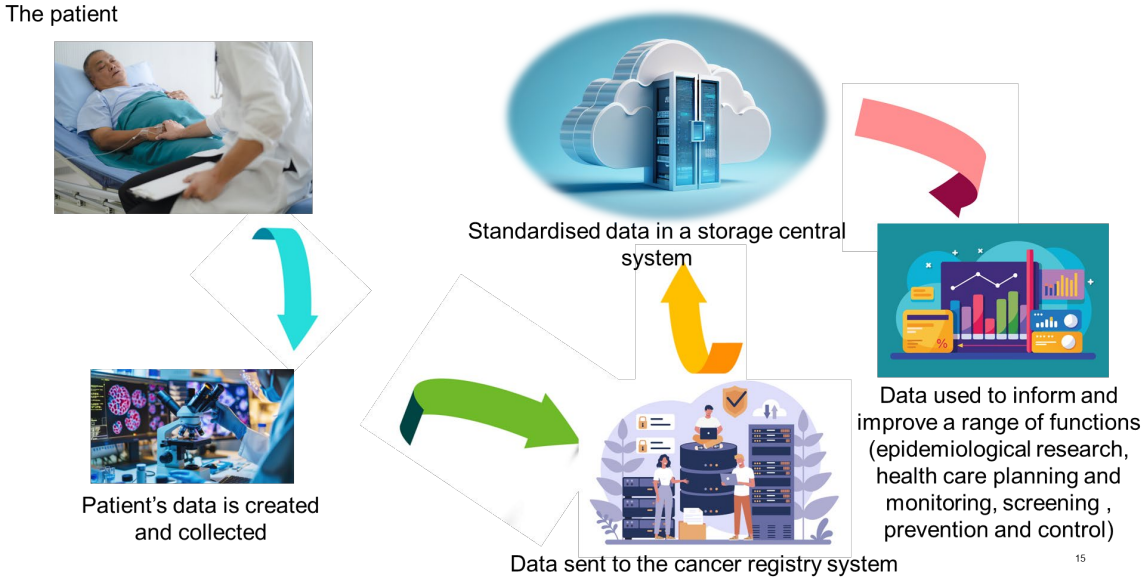
If data is so powerful, why don't we have already lots of cancer data on domestic animals already?

Well, that brings us to one of the most critical tools for cancer data collection:

Cancer registries

What is a cancer registry?

“Organisation for the systematic collection, storage, analysis, interpretation and reporting of data on subjects with cancer”



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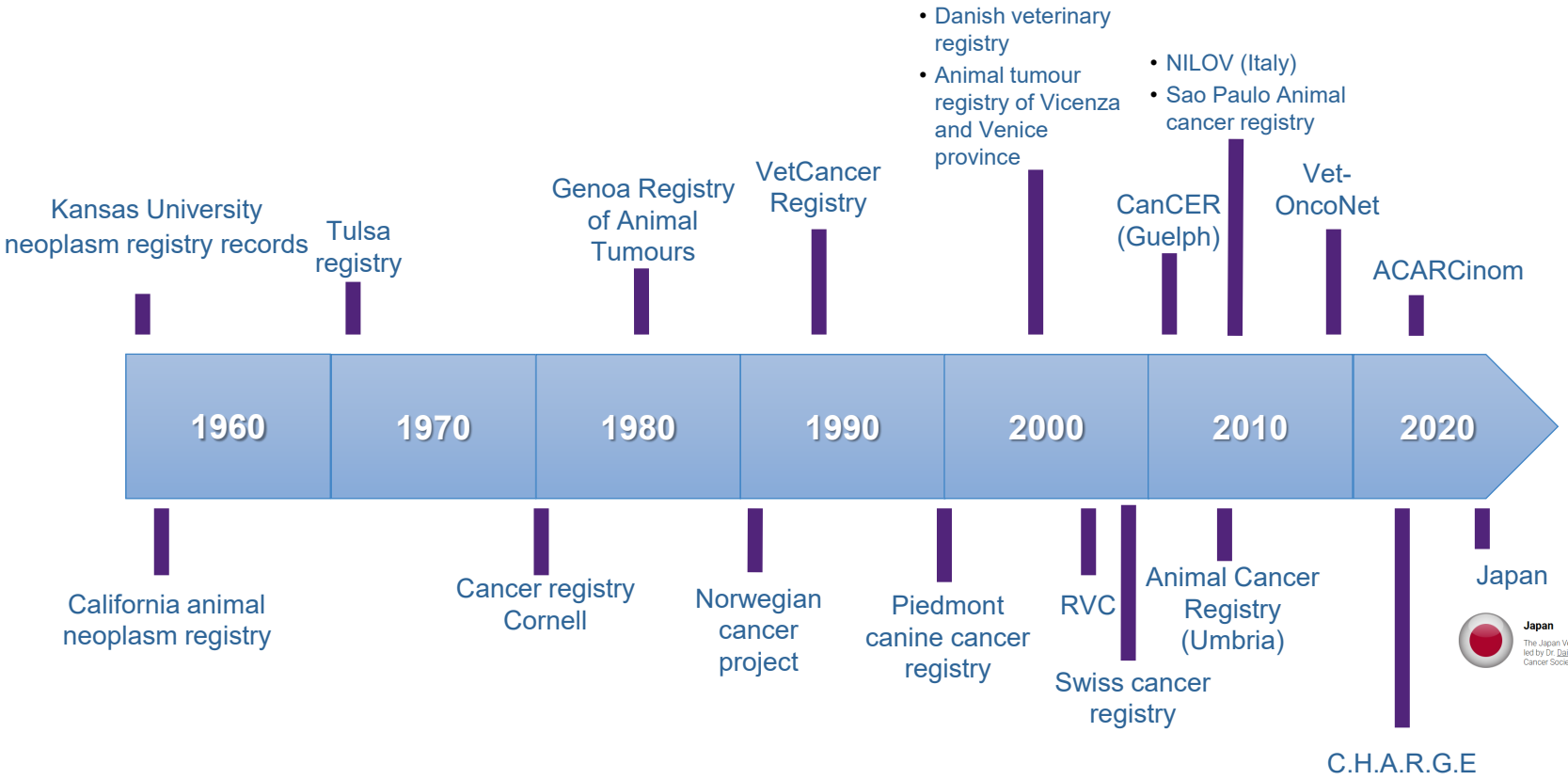
Veterinary cancer registries: encouraging examples we can learn from



Challenges in establishing veterinary cancer registries

1) LACK OF DENOMINATOR AND CENSUS DATA

2) SUSTAINABLE STRUCTURAL RESOURCES and COMMITMENT

3) COMPLETENESS OF REPORTING

LOCAL CHALLENGES

Challenges in establishing veterinary cancer registries

1) UNIFORMITY IN THE DIAGNOSTIC TERMS

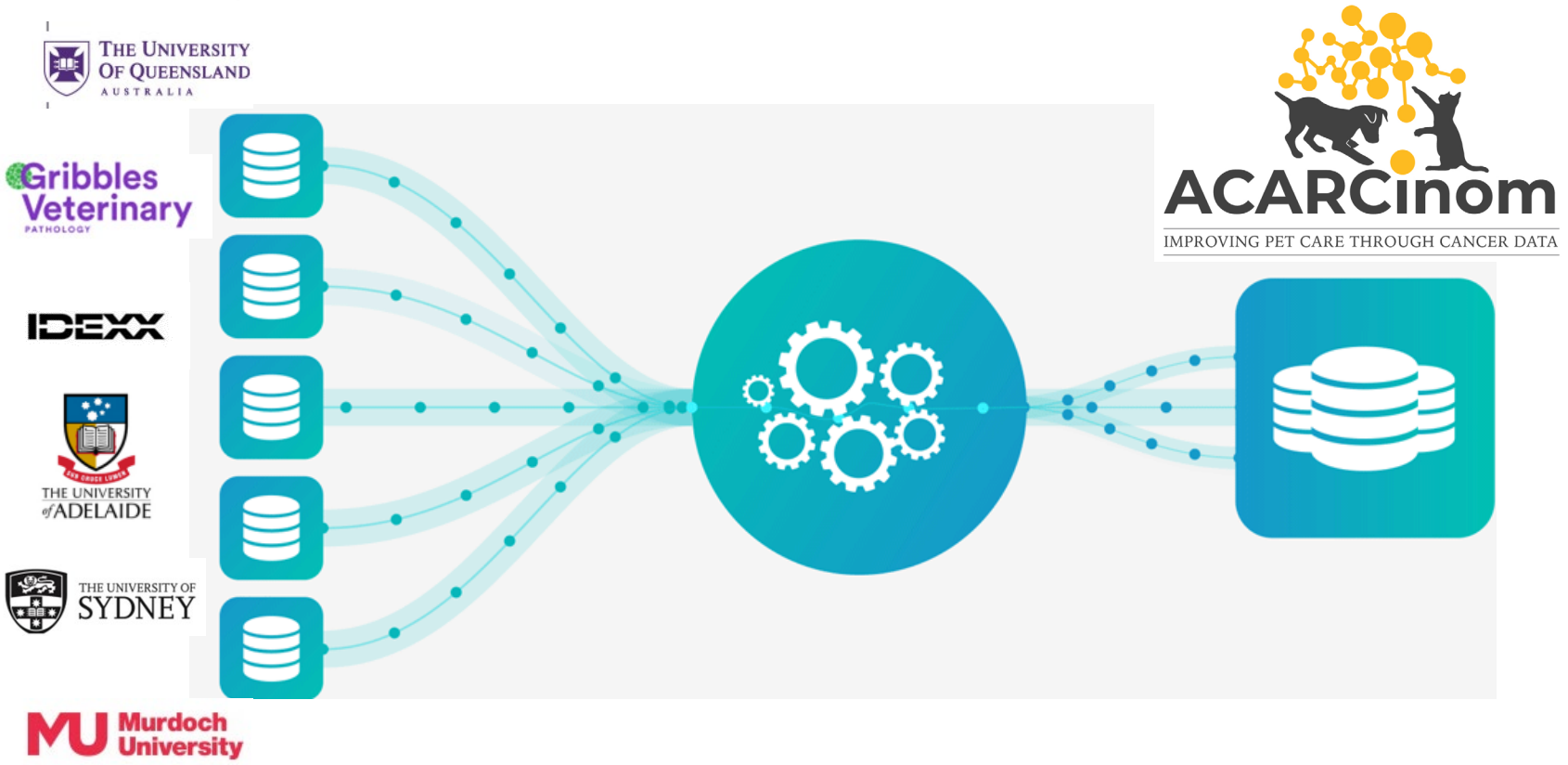
Standardisation efforts

2) LACK OF GUIDELINES AND STANDARDS

- No standardised approach to cancer registration
- Different methodologies and inclusion criteria
- “comparability”
- Standardised definition of minimum requirements

GLOBAL CHALLENGES

We overcame some of these challenges building the Australian Companion Animal Registry of Cancers (ACARCInom)



ACARCinom Pre-development

ACARCinom data requirements

Ref_No, Patient_ID, Postcode, Request date, Species, Breed, Sex, Castration status, DOB or age, Diagnosis, Topography, Grade, Certainty, Metastases

Inclusion criteria

- Cancer cases only
- Histopath
- Dogs, cats
- Necropsies, biopsies

Analysis data format

Small dataset from each data provider > definition of data extraction and transformation

Data dictionary (vocabulary)

Dictionary for:

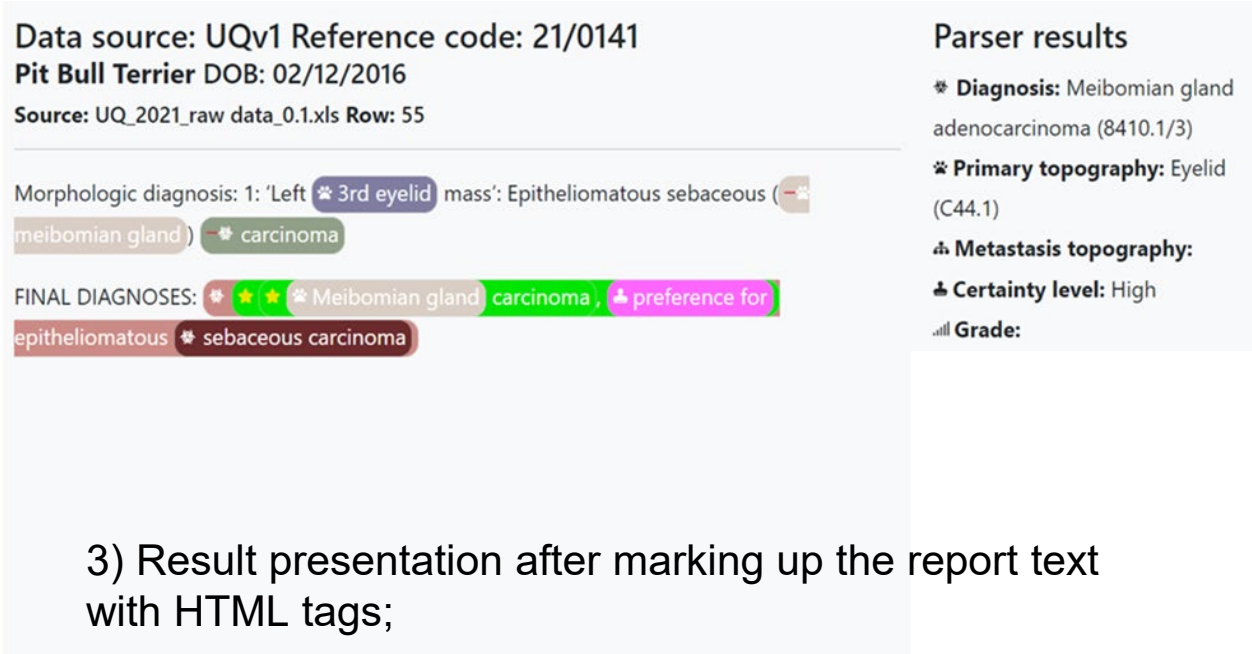
- Topography
- Diagnosis
- Grading
- Breeds
- Postcode
- Level of certainty

Guidelines for “exceptions”

Rules for registering multiple tumours in the same location, multiple tumours in different locations, systemic tumours

ACARCinom Development

ACARCinom data parsing system



3) Result presentation after marking up the report text with HTML tags;

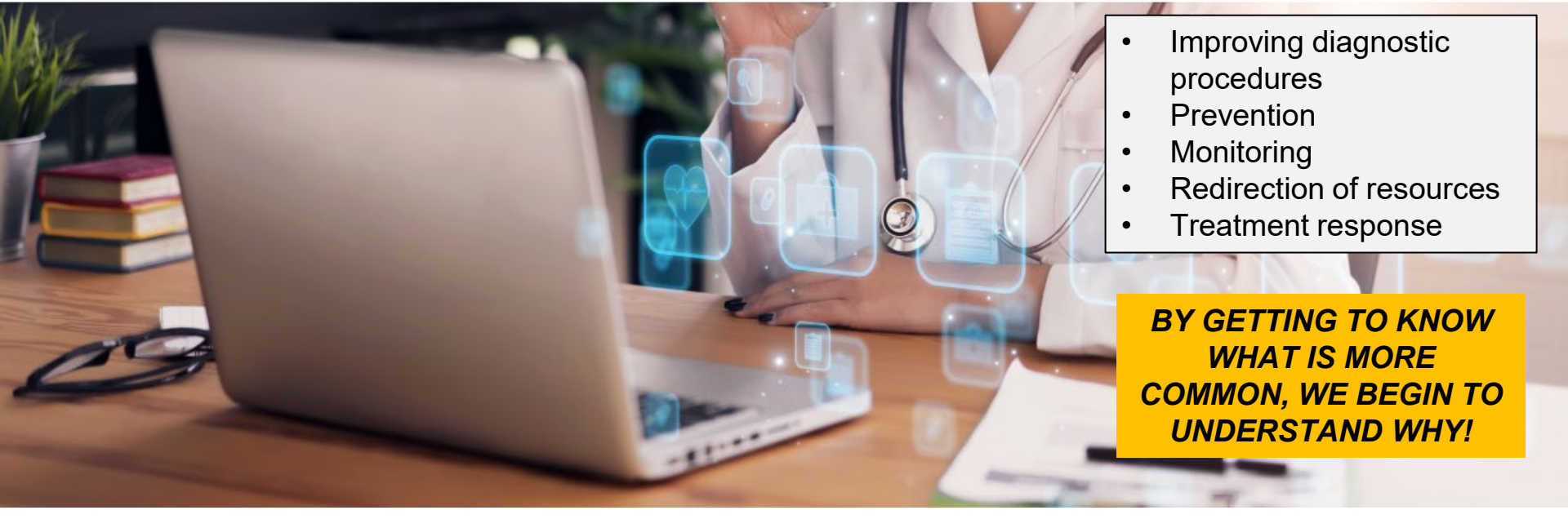
ACARCinom updates

Since January 2024 more than 10000 coded records have been processed. Summary of the data publicly accessible on the ACARCinom dashboard

- Processing thousands of reports per minute with minimal human intervention
- Decades of historical and prospective cancer data can now be processed and made available for diagnostic and research purposes.

Why having cancer data is so important for our pets, for veterinary professionals and for scientists?

The potential of big data in pet cancer science and care is absolutely huge!

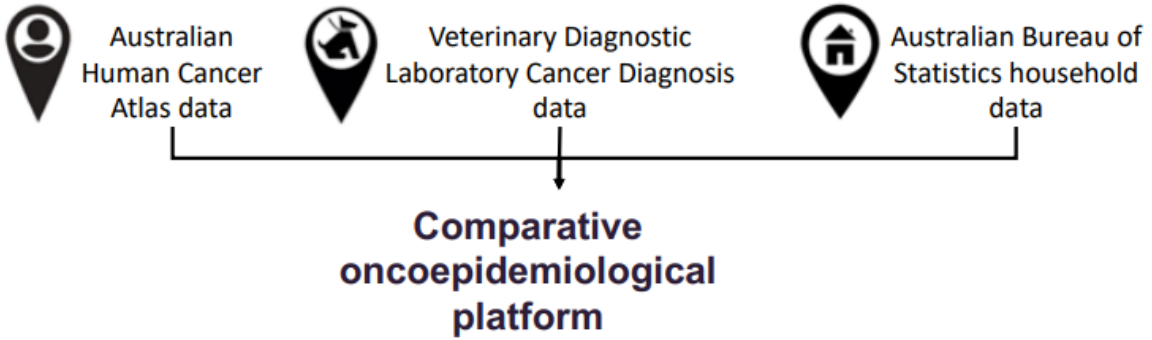


- Improving diagnostic procedures
- Prevention
- Monitoring
- Redirection of resources
- Treatment response

BY GETTING TO KNOW WHAT IS MORE COMMON, WE BEGIN TO UNDERSTAND WHY!

The potential of using cancer data in veterinary epidemiology studies…

- Opportunity to “map” tumours and identify cancer hot spots
- Link with environmental data (e.g. air pollution, proximity to industrial areas, etc)
- Co-localisation with human cancer cases (shared risk paradigm)



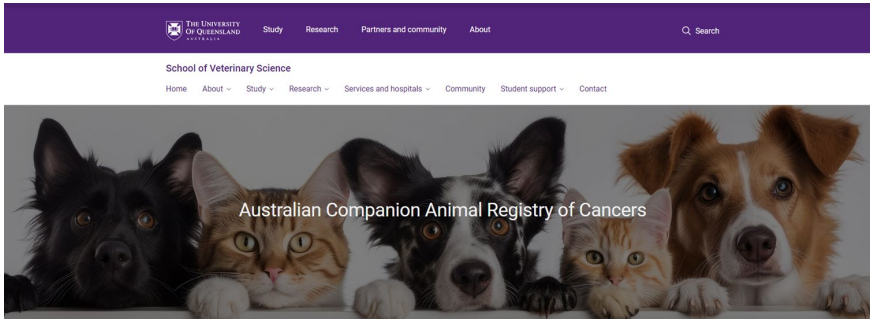
Call to action

- Support data collection initiatives
- Encourage clinic participation in registries
- Educate pet owners on the value of data
- Create networking opportunities between registries, data systems and institutions working in the field of veterinary oncoepidemiology

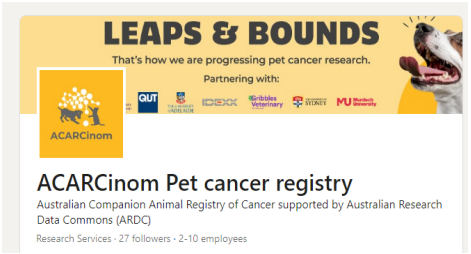
Behind every data point is a paw, a heartbeat, and a story

How to access ACARCinom

acarcinom.org.au



https://veterinary-science.uq.edu.au/australian-companion-animal-registry-cancers



acarcinom.org.au

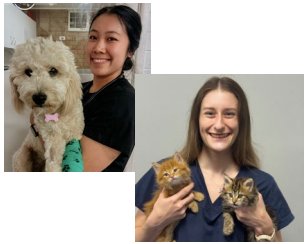
Thanks to all the people behind the scene!

Victor
Master student
(risk factors of mammary cancer in dogs and cats)

Alistair
(DVM)
(Cancer occurrence in Golder retrievers)

Mifta
MPhil student
(air pollution and lung cancer in dogs)

Ticiana
DVClinSc student
(risk factors and computational pathology of canine prostate cancer)



Emily and Elyssa
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(Testicular tumours in dogs)

Evaristo
PhD student
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Prof Ricardo Soares Magalhaes and Dr Kei Owada
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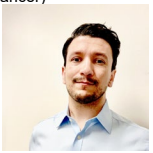
(canine prostate and bladder cancer)

Prof Yinyin Yuan and Dr Simon Castillo
MD Anderson Cancer Center
(AI and cancer)



ACARCinom team and research partners

Lawrence
DVClinSC student
(ACARCinom)

Thank you for listening today!

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https://veterinary-science.uq.edu.au/australian-companion-animal-registry-cancers
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Australian Research Data Commons