

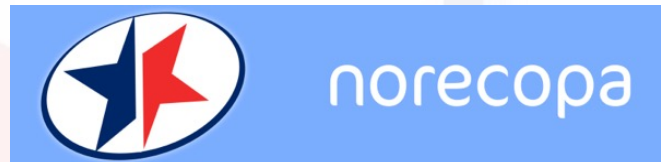
Bruk av en Refinement Wiki for å øke kommunikasjon

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<https://norecopa.no>

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Hva trenger vi å kommunisere?

- ✓ hvordan vi produserer gyldige forsøksdata (ekte behandlingseffekter)
- ✓ hvordan vi gjennomføre reproduerbare og overførbare studier
- ✓ hvordan vi maksimere dyrevelferden
- ✓ tips om HMS (både mennesker og andre dyr på avdelingen)
- ✓ hvordan vi får en god omsorgskultur på jobben (“culture of care”)

Alle kan kommunisere dette - ikke minst teknikerne

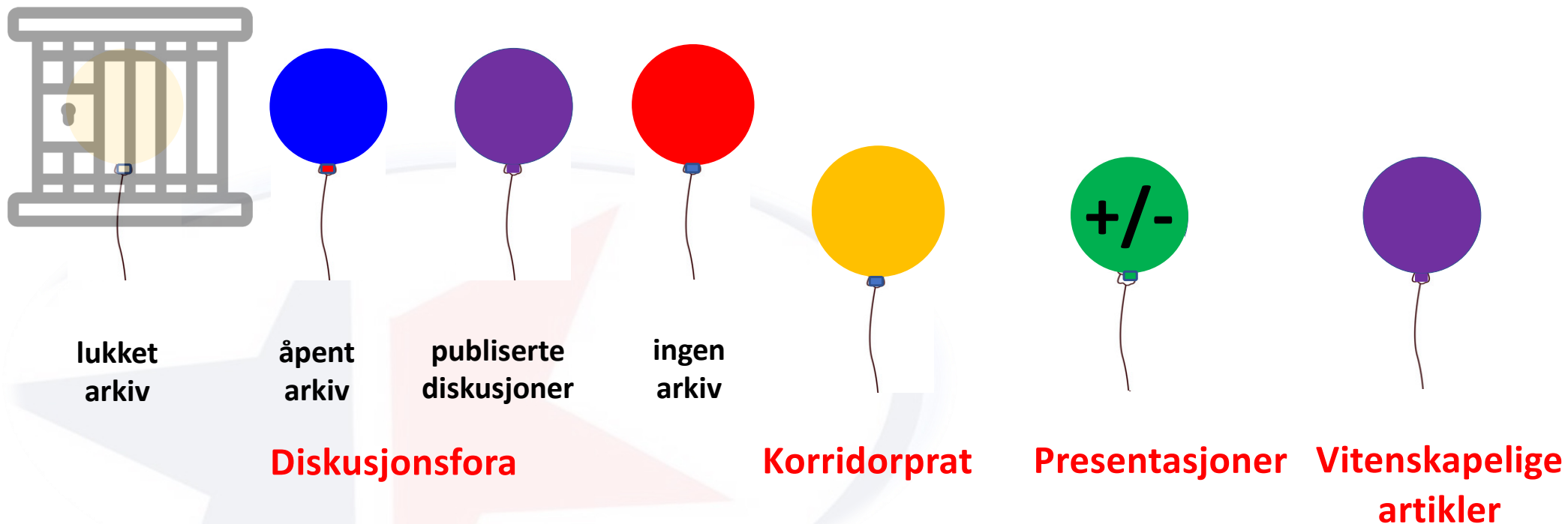


3R-litteratur kan være vanskelig å finne

norecopa.no/more-resources/literature-searches-and-systematic-reviews

- Vi trenger å søke i flere databaser (dårlig overlapping)
- Få forskere kjenner til spesialistdatabasene
- Forskere sjeldent bruker «3R-ord» når de skriver titlene/sammendragene/keywords til sine artikler
- Vi har ikke ett omfattende ”Journal of the Three Rs”
- ***Mange gode 3R-ideer blir aldri publiserte...***

Gode ideer, deres skjebne...



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The Refinement Wiki



Skal være

- en portal for hurtig publisering og spredning av kunnskap og idéer
- et sted å identifisere eksperter på spesifikke refinement-teknikker
- et hjelpemiddel for å identifisere potensielle samarbeidspartnere for multi-lab studier

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Innhold kan legges inn anonymt eller under ditt navn

Du kan legge inn innhold selv, eller be Norecopa om å gjøre det

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Clicker training

Clicker training is an operant conditioning based on positive reinforcement. When the animal offers the desired behavior, a *click* or another distinctive sound (secondary reinforcer) is delivered and within the following few seconds the reward is presented (primary reinforcer)^[1]. The *click* bridges the time between the desired behavior and the presentation of the reward^[1]. A target stick providing a visual guide for the animal can be used for the training.

Animals are usually trained individually, though it is also possible to perform clicker training in a groups, e.g. in mice, rats, and rabbits. For rats, it was demonstrated that they learned tasks by observing the clicker training of their cage mates^[2].

Clicker training can be used to train animals in a stress-free way. The following behaviours are examples for what this technique can be used for:

Mice: entering a tunnel, following a target stick, climbing on the palm of the hand^[3]

Rats: following a target stick, voluntarily change to a cage, observational learning^[2]

Rabbits: following a target stick, rearing/standing up to inspect the abdomen, approaching a human, being touched and lifted by a human, trimming nails, coming on command

Pigs: Pigs can be easily trained to cooperate if they are treated empathetically and desired behavior is reinforced by providing food stuff in form of treats and apple juice^[4].



Clicker training with mice using a target stick. *Left:* The mouse is following the target stick and is climbing on the experimenter's hand. If the hand is lifted, the mouse will remain on the palm of the hand. *Right:* The mice are trained in a group. Two mice are following the target stick on the palm of the experimenter's hand.

- [↑] ^{1.0} ^{1.1} Feng, Lynna C.; Howell, Tiffani J.; Bennett, Pauleen C. (1 August 2016). "How clicker training works: Comparing Reinforcing, Marking, and Bridging Hypotheses". *Applied Animal Behaviour Science*. **181**: 34–40. doi:10.1016/j.applanim.2016.05.012. ISSN 0168-1591.
- [↑] ^{2.0} ^{2.1} Leidinger, Charlotte Sophie; Kaiser, Nadine; Baumgart, Nadine; Baumgart, Jan (25 October 2018). "Using Clicker Training and Social Observation to Teach Rats to Voluntarily Change Cages". *JoVE (Journal of Visualized Experiments)* (140): e58511. doi:10.3791/58511. ISSN 1940-087X. PMC 6235608. PMID 30417890.
- [↑] Leidinger, Charlotte; Herrmann, Felix; Thöne-Reineke, Christa; Baumgart, Nadine; Baumgart, Jan (6 March 2017). "Introducing Clicker Training as a Cognitive Enrichment for Laboratory Mice". *JoVE (Journal of Visualized Experiments)* (121): e55415. doi:10.3791/55415. ISSN 1940-087X. PMC 5408971. PMID 28287586.
- [↑] "Positive Reinforcement Training in Large Experimental Animals" (PDF).

Experts for clicker training in mice and rats: TARC, Mainz, Germany

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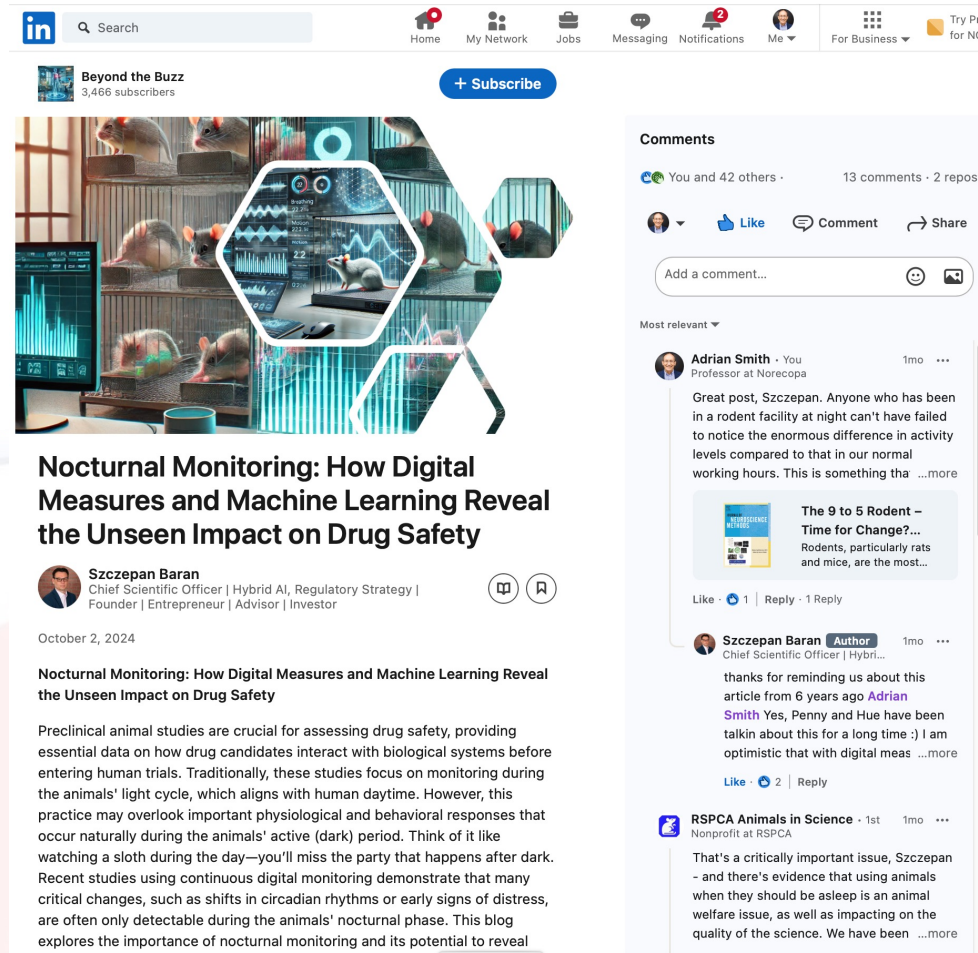
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Nocturnal Monitoring: How Digital Measures and Machine Learning Reveal the Unseen Impact on Drug Safety

Szczepan Baran
Chief Scientific Officer | Hybrid AI, Regulatory Strategy | Founder | Entrepreneur | Advisor | Investor

October 2, 2024

Nocturnal Monitoring: How Digital Measures and Machine Learning Reveal the Unseen Impact on Drug Safety

Preclinical animal studies are crucial for assessing drug safety, providing essential data on how drug candidates interact with biological systems before entering human trials. Traditionally, these studies focus on monitoring during the animals' light cycle, which aligns with human daytime. However, this practice may overlook important physiological and behavioral responses that occur naturally during the animals' active (dark) period. Think of it like watching a sloth during the day—you'll miss the party that happens after dark. Recent studies using continuous digital monitoring demonstrate that many critical changes, such as shifts in circadian rhythms or early signs of distress, are often only detectable during the animals' nocturnal phase. This blog explores the importance of nocturnal monitoring and its potential to reveal

Comments
You and 42 others · 13 comments · 2 reposts

Adrian Smith · You
Professor at Norecopa
Great post, Szczepan. Anyone who has been in a rodent facility at night can't have failed to notice the enormous difference in activity levels compared to that in our normal working hours. This is something tha ...more

Szczepan Baran (Author)
Chief Scientific Officer | Hybri...
thanks for reminding us about this article from 6 years ago [Adrian Smith](#) Yes, Penny and Hue have been talkin about this for a long time :) I am optimistic that with digital meas ...more

RSPCA Animals in Science · 1st
Nonprofit at RSPCA
That's a critically important issue, Szczepan - and there's evidence that using animals when they should be asleep is an animal welfare issue, as well as impacting on the quality of the science. We have been ...more

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Microchipping rats and mice

The text on this page is taken from an informal compilation of opinions of contributors to the online VOLE List. As such, they are not peer reviewed and may contain differences of opinion. Those wishing to contact the list may contact [Adrian Smith](#).

I would be interested to hear your collective views on microchipping rats and mice. There seems to be a considerable variation in opinion as to whether the “newer style” chips, many of which are delivered via a 21g needle, should be implanted under anaesthesia, or physical restraint. I note that some of the review articles on identification of methods seem to avoid mentioning the issue, and others say “its a matter of preference”. There seems to be a lack of published data on the immediate adverse effects (if any) of implantation, the few papers out there seem focussed on tissue reaction long term etc. So if you microchip your rats and mice do you have a policy, is it based simply on consensus, or do you advise one approach or the other and leave it up to investigators to decide?

I have been doing quite a lot of digging into the literature, and can get some evidence base that:

- In people, decreasing the needle size does reduce (slightly) pain on placing a needle subcutaneously
- Somatosensory (and nociceptor) innervation of skin is very similar in rodents and humans but central processing differs (so nociceptor stimulation in skin should produce pain, and less stimulation should cause less pain).
- One interesting paper showing bevel up injection causes less pain than bevel down (remember having that debate regarding ease of getting a needle into a vein...).
- One non-peer reviewed study showing implants of the smallest chips didn't change growth rate in juvenile mice.
- Variations in SOPs on lab animal unit web sites from “no anaesthesia” to “anaesthesia if preferred” to “give an anaesthetic”.
- Recommendations from assorted non-lab organisations of anaesthesia “to prevent risk of injury” to small mammals and birds - but not to avoid pain.
- Most manufacturer's of microchips seem to assume no anaesthesia needed.

ca. 70 temaer (november 2024)

- Alphaxalone
- Anaesthesia in neonates
- Analgesia
- Asepsis
- Blood sampling of hamsters
- Blood sampling of pigs
- Blood sampling of rainbow trout
- Breeding strategies for mice
- Clicker training
- Contingency plans
- Decapitation
- Dehydration
- Detecting early onset of clinical signs in the mouse model of Covid-19
- Detection of pain and distress in mice
- EMLA cream
- Embryo transfer
- Experimental Autoimmune Encephalomyelitis (EAE)
- Facial expression analysis
- Food crunchers
- Forced swim test
- General discussion on use of analgesics
- Genotyping mice

- Habituation training
- Health monitoring
- High-fat diets
- Hot Bead Sterilisers
- Housing nude mice
- Housing research fish
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- Hydrodynamic gene delivery
- Intra-ocular injections
- Intranasal administration
- Intraperitoneal injection
- Intraperitoneal pentobarbitone
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- Mouse handling
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- Oestrus suppression in ferrets
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- Ulcerative Dermatitis in Mice
- Water quality
- Xenopus laevis
- Zebrafish swabbing

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Kan vi stole på innholdet?

Innholdet er ikke kvalitetssikret av noen - ansvaret for kvaliteten ligger hos forfatteren

En del av innholdet er personlige meninger basert på erfaringer

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I tillegg har wiki'en sin egen søkemotor



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Takk til

- Susanna Louhimies (EU-kommisjonen) som foreslo det
- Dyrevernalliansen som sponset installeringen av programvaren



The Norwegian Animal Protection Alliance's Research Fund



Dyrevernalliansen

Takk til:

De som bidro til å lansere Wiki'en i 2019:

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Lucy Whitfield

Ngaire Dennison

Pascalie Van Loo

Paulin Jirkof

viola Galligioni

Øyvind Wærenskjold

Blir du den neste bidragsyteren?

Og ikke minst Mark d'Alton fra VOLE forum

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