

Does wearing sunscreen prevent skin cancer ?

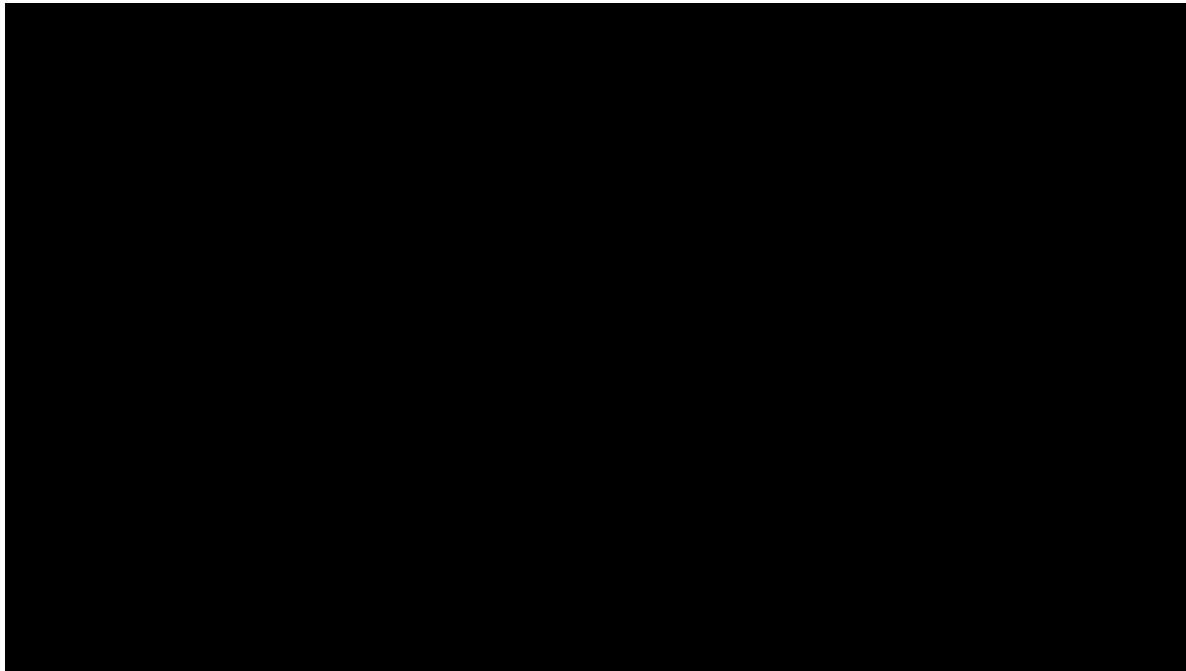


Dr Elke Hacker

IHOP Research Group, School of Public Health, Institute for Health and Biomedical Innovation, Queensland University of Technology, Brisbane, Queensland, Australia.

Skin Cancer Rates

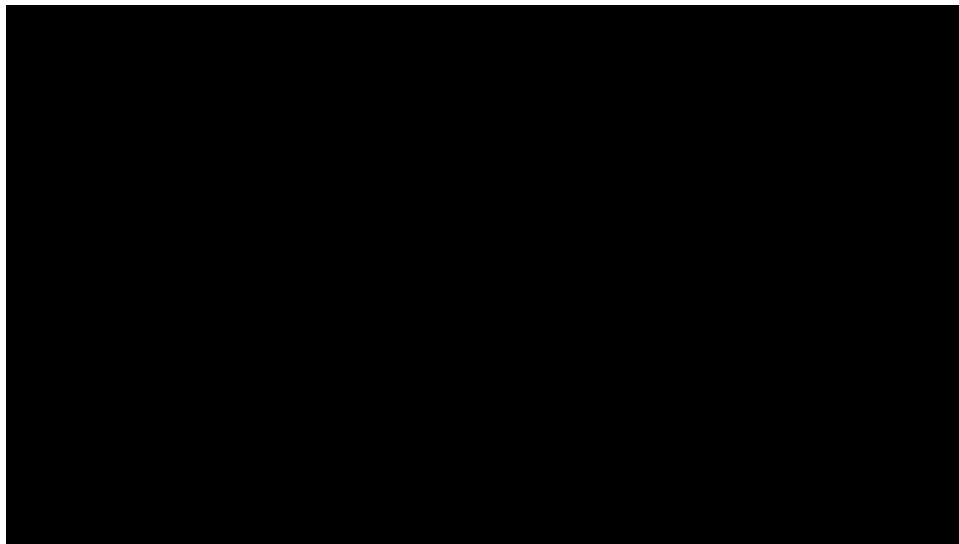
- More than 1600 Australians die from melanoma each year.



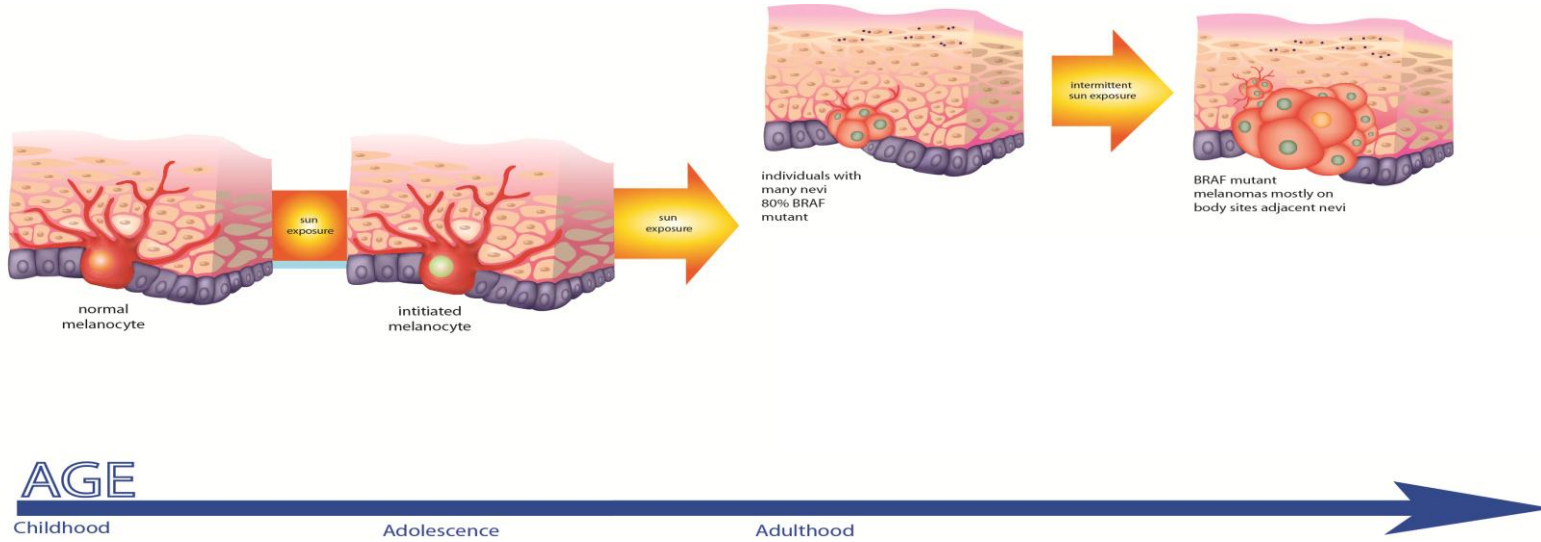
Skin Cancer Prevention

- Epidemiological and animal studies strongly suggest that risk of skin cancers is determined by exposure to ultraviolet radiation (UVR).
- Interactions between host characteristics and subsequent patterns and dose of sun exposure.
- Sunburn reflects a damaging dose of UVR. Having more than five sunburns can double your risk of melanoma.

Sunburn



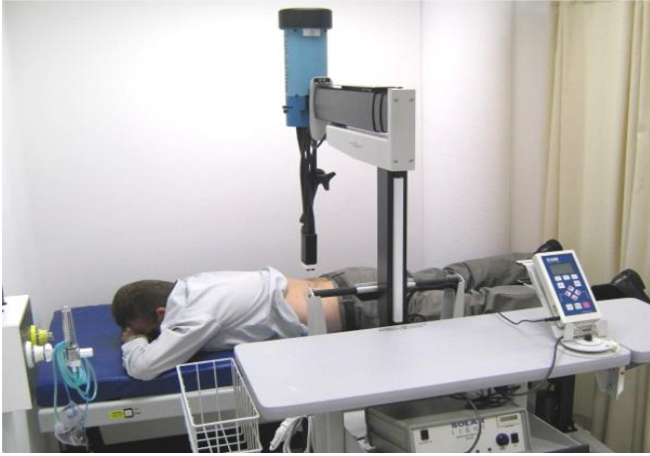
Melanoma Pathway



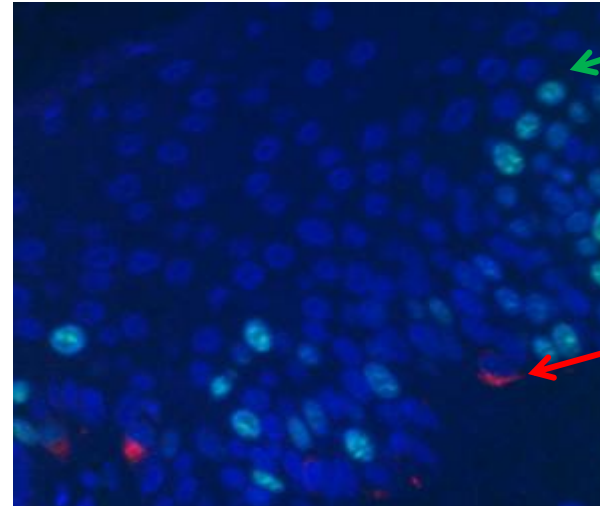
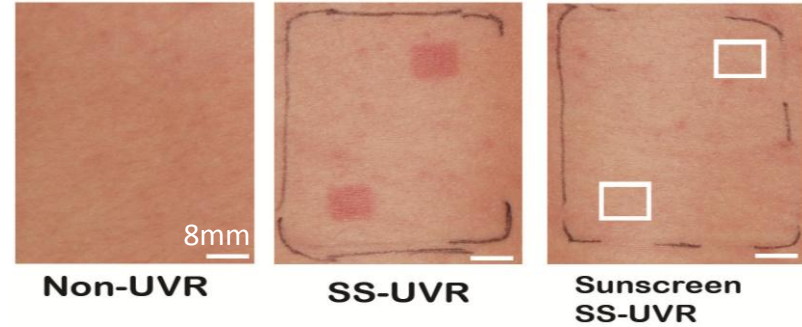
Prevention Study

- 1) *compare* the response of melanocytes in humans before and after ultraviolet radiation (UVR) exposure
- 2) *observe* changes in skin colour and pigmentation after UVR exposure
- 3) *measure* the effect of broad-spectrum sunscreen on the response of melanocytes before and after UVR exposure in humans

Testing Sunscreen



Sunscreen applied to the skin before exposure to 2 MED SSUVR completely blocked the UV-induced skin damage parameters measured, and subsequent responses.



Proliferating Cells

Melanocyte

Sunscreen Study Conclusion

- The density of epidermal melanocytes 14 days after exposure to 2 MED SSUVR was two-fold higher than baseline (unirradiated) skin.
- The change in epidermal melanocyte counts among people carrying the red hair gene (*MC1R*) was significantly lower than those with wild-type *MC1R*.
- Sunscreen applied to the skin before exposure to 2 MED SSUVR completely blocked the UV-induced skin damage parameters measured, and subsequent responses.

Prevention

- Over the past thirty years, Australia has led the world with the *Slip Slop Slap* and *SunSmart* campaigns.
- Many young Australians still get sunburnt on a regular basis despite having good knowledge and sun-protective intentions.
- Why and what would help??
- UVR feedback could assist in reducing exposure levels and decreasing the risk of skin cancer.

Devices and data collection tools

UV Devices



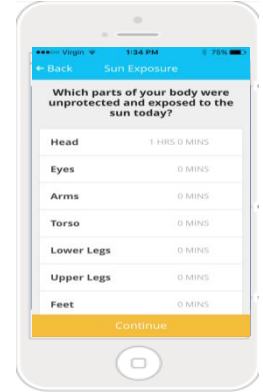
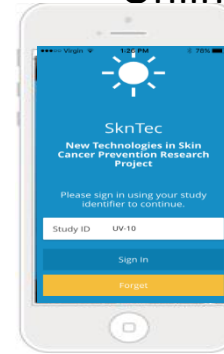
- UV alerts (based on skin type and daily dose of ultraviolet B rays)
- Alarm's when sun protection measures are required

SunSmart App



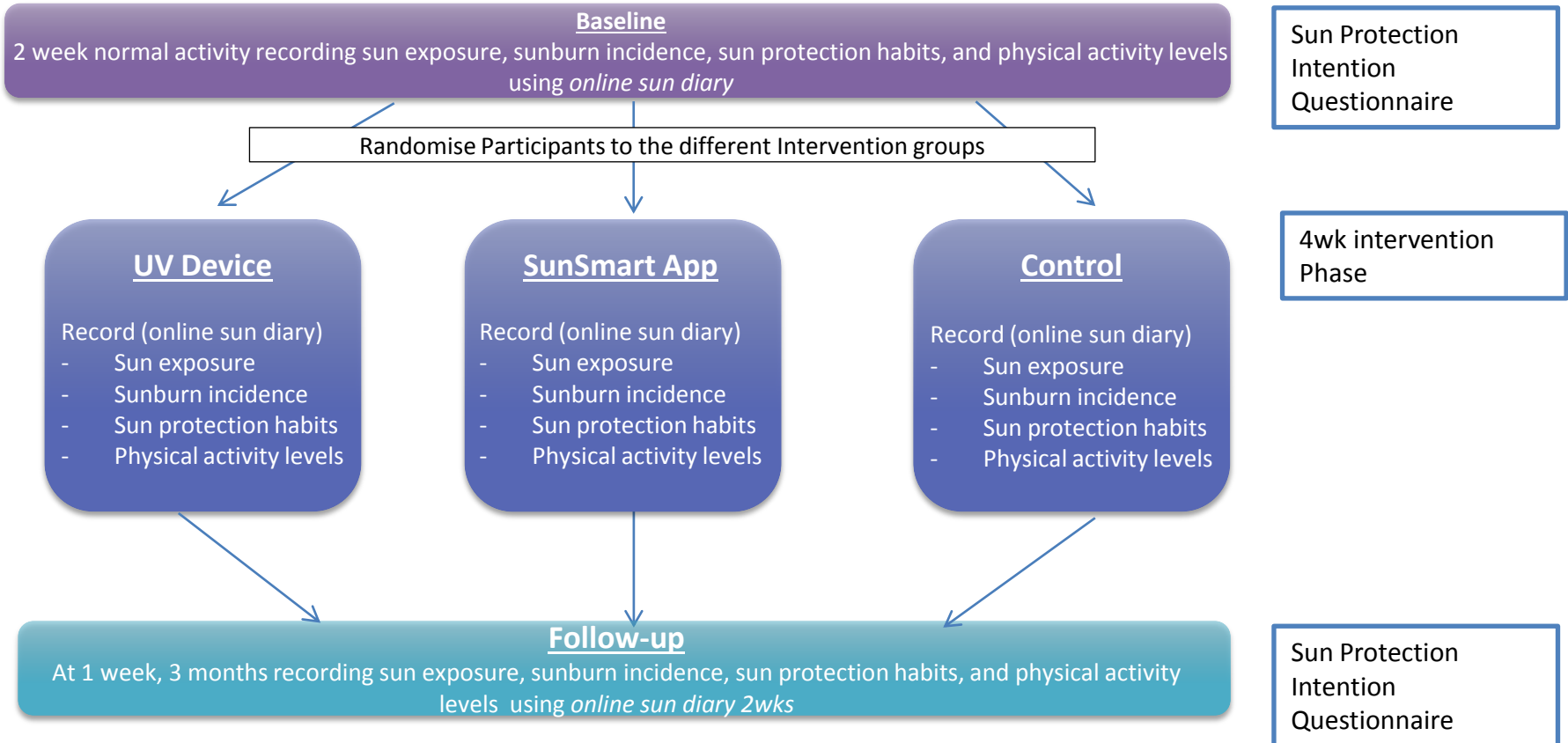
- Sun protection alert
- Sunscreen reminder/ calculator
- Vitamin D tracker

Online Sun Diary



- Sun exposure
- Sunburn incidence
- Sun protection habits
- Physical activity levels

RCT-Study Design





What new technologies could help prevent skin cancer?

Help us find out
Be part of the research



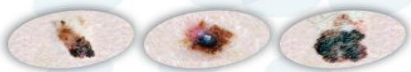
Contact Us

Local call **07 3138 9674**
Email **skntec@qut.edu.au**

Supported by

Skin Cancer what's the story

Over the past thirty years, Australia has led the world with the *Slip Slip Slap* and *SunSmart* campaigns. These programs have greatly raised public awareness, however despite this effort, it is predicted that by the year 2020 there will be more than 13,000 new cases of melanoma in Australia. Ultraviolet radiation (UVR) or sunlight exposure is the main environmental risk factor for skin cancer development. Many young Australians still get sunburnt on a regular basis despite having good knowledge and sun-protective intentions. Sunburns often occur during unplanned sun exposure, around the home or during activities where people do not expect to be outside for long. UVR feedback could assist in reducing exposure levels and decreasing the risk of skin cancer.



Why is this study important?

This study will be the first clinical experiment to directly test the use of personal ultraviolet radiation (UVR) devices and the impact they may have on people's UVR exposure behaviours (if any).

What is involved in participating?

We are looking for participants aged 18–30 years old to attend the clinic for seven visits, where you will complete three questionnaires as well as record your sun exposure, sunburn, and physical activity levels.

What are the benefits?

It is expected that this project will not benefit you directly, however you will be reimbursed for your time to the value of \$70. Your help will contribute to improve sunsafe practices in the future.

HELP US TRY TO SOLVE MELANOMA BY TAKING THESE STEPS

Contact us to arrange for an interview with our clinical assessor at the Queensland University of Technology, Kelvin Grove campus.

Local call **07 3138 9674**
Email **skntec@qut.edu.au**



Online Sun Diary

The image displays four sequential screens of the SknTec app on a smartphone. The first screen is the login page, featuring a sun icon, the app name 'SknTec', and the project name 'New Technologies in Skin Cancer Prevention Research Project'. It prompts the user to sign in with a study ID (UV-10) and includes 'Sign In' and 'Forget' buttons. The second screen, titled 'Sun Exposure', asks 'Which parts of your body were unprotected and exposed to the sun today?' and lists body parts with time inputs: Head (1 HRS 0 MINS), Eyes (0 MINS), Arms (0 MINS), Torso (0 MINS), Lower Legs (0 MINS), Upper Legs (0 MINS), and Feet (0 MINS). A 'Continue' button is at the bottom. The third screen, titled 'Sunscreen', asks 'Did you stay out in the sun to get a tan?' and 'Did you wear sunscreen?', each with 'YES' and 'NO' buttons. The fourth screen, also titled 'Sunscreen', asks 'Type of sunscreen?' (SPF50+), 'Times you applied sunscreen' (1), and 'Time of the day sunscreen applied' (08:00AM). It then asks 'Which part of the body did you apply sunscreen to?' with checkboxes for 'Face And Ears' (checked) and 'Neck And Shoulders' (unchecked). A 'Continue' button is at the bottom.

Screen 1: Login

1:26 PM 78%
SknTec
New Technologies in Skin Cancer Prevention Research Project
Please sign in using your study identifier to continue.
Study ID UV-10
Sign In
Forget

Screen 2: Sun Exposure

Back Sun Exposure
Which parts of your body were unprotected and exposed to the sun today?
Head 1 HRS 0 MINS
Eyes 0 MINS
Arms 0 MINS
Torso 0 MINS
Lower Legs 0 MINS
Upper Legs 0 MINS
Feet 0 MINS
Continue

Screen 3: Sunscreen

Back Sunscreen
Did you stay out in the sun to get a tan?
YES NO
Did you wear sunscreen?
YES NO

Screen 4: Sunscreen

Back Sunscreen
Type of sunscreen? SPF50+
Times you applied sunscreen 1
Time of the day sunscreen applied
1st Application 08:00AM
Which part of the body did you apply sunscreen to?
Face And Ears ☒
Neck And Shoulders ☐
Continue

Validating online sun diary Tool

Background

- Paper format sun diaries have been used extensively in numerous population health studies to categorially record participants activities and determine sun exposure, sunburn incidence, sun protection habits and physical activity levels.

Rationale

- To improve compliance and reduce burden on study participants we developed an online app version.

Aim

- To undertake a comparison study examining the paper format sun diary and the online sun diary app.

Validation Study Devices

UV Device



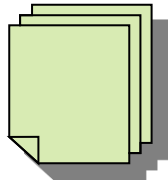
- Recording UV levels

Physical Activity Monitor



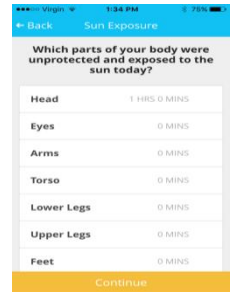
- Objective measurements of human activity (e.g., steps)

Paper format



- Sun exposure
- Sunburn incidence
- Sun protection habits
- Physical activity levels

Online Sun Diary



- Sun exposure
- Sunburn incidence
- Sun protection habits
- Physical activity levels

Innovation and Future



Tap on
sun



Press
start

