

# THE **B** BLUES



# FIRST IDENTIFIED IN THE 1950S, THE GENETIC VITAMIN DEFICIENCY PYROLURIA IS AT LAST BEING RECOGNISED AS A MAJOR CAUSE OF DEPRESSIVE ILLNESSES. **BY LAURA GREAVES**

**D**epression is more prevalent in Australia in the 21st century than ever before. According to the national depression initiative BeyondBlue, about 20 per cent of us will suffer from depression during our lives: that's more than four million Australians struggling daily with symptoms including insomnia, feelings of hopelessness and despair and a loss of pleasure and interest in normal activities.

Around 1.3 million people will experience a major depressive illness such as bipolar disorder or postnatal depression and women are twice as likely to be affected as men.

Depression isn't just an individual struggle; it impacts the broader community, too. Major depression accounts for more days lost due to illness than almost any other physical or mental disorder. Mental disorders are the third leading cause of disability burden in Australia, accounting for almost one third of the total years lost due to disability.

Despite its prevalence, for all we now know about depression and its causes, some myths persist. Among the most common of these is the belief that depression is "all in the mind" — that it is a purely psychological condition that can be conquered with medication and mind-over-matter techniques. In fact, while psychological, emotional and social factors can all cause depression, a combination of physical, biochemical and genetic factors are also significant contributors — and an increasingly common physiological cause of depression is pyroluria.

## THE PYROLURIA LINK

First identified in the 1950s through tests with patients in a psychiatric hospital, pyroluria is a feature of many emotional and behavioural disorders: notably depression, anxiety and schizophrenia. It is a metabolic disorder in which, under stressful conditions, a person becomes depleted of pyridoxine — better known as vitamin B<sub>6</sub> — and zinc.

Reputedly, writers Emily Dickinson and Charles Dickens and scientist Charles Darwin all showed classic signs of pyroluria.

"It surprised me very much to discover that depression and anxiety weren't just psychological," says Carolyn Broomfield,

a Gold Coast-based personal trainer who was diagnosed with pyroluria in May 2011.

"For many years, I found that the symptoms I went to naturopaths with never really disappeared, so I would move right along to the next one, still hoping for an answer as to why I always felt unwell. After my diagnosis, my health issues made perfect sense and for the first time I felt I wasn't crazy."

## WHAT IS PYROLURIA?

Sometimes also called mauve factor, pyrrole disorder or kryptopyrrole, pyroluria is the abnormal synthesis of haemoglobin, the oxygen-carrying molecule in the blood. During haemoglobin synthesis, people with pyroluria produce excessive amounts of waste products called pyrroles.

"Pyrroles are relatively harmless but they bind to B<sub>6</sub> and zinc," says Sydney naturopath Kylie Seaton. "This means these nutrients are also transported out of the body and can't be used for vital functions such as neurotransmitter production."

Zinc and vitamin B<sub>6</sub> are directly involved in maintaining a healthy emotional state. "This explains how pyroluria impacts mental and emotional health and has been

linked to depression, anxiety, ADHD and schizophrenia," says Seaton.

According to leading pyroluria researcher Dr William Walsh from the Walsh Research Institute in the US, the symptoms of pyroluria include severe mood swings, poor stress control, extreme anxiety, poor short-term memory, the absence of dream recall, sensitivity to light and noise, poor immune function, very poor morning appetite, abnormal fat distribution and an inability to tan.

It was only after her pyroluria diagnosis that Carolyn Broomfield realised she had been plagued by many of these symptoms for years. "For many years I had presented as unwell to naturopaths and doctors, mainly with fatigue and anxiety," she says. "I never wanted to be considered 'depressed' but, looking back over the years, I probably was.

"For weeks on end I'd be like a zombie with 'brain fog'. I never slept well and always woke up tired. I also had mood swings, low libido, fluid retention, poor short-term memory and hormone issues."

Pyroluria is diagnosed by testing the urine for elevated pyrroles and Broomfield's Urinary Kryptopyrrole Analysis (UKA) test revealed highly elevated levels. Patti Dyne, →

## BIOCHEMICAL CULPRITS

**Pyroluria may not be the only physiological cause of depression, according to leading researcher Dr William Walsh. More than 250,000 blood and urine samples taken from 3000 patients diagnosed with clinical depression in Dr Walsh's "depression database" revealed "a wide range of abnormal chemistries and behaviours ... in the depressive population".**

**These samples highlighted five chemical classifications that represented 95 per cent of depressives. Fifteen per cent of patients showed pyroluria, while a further:**

- **38 per cent showed undermethylation, or elevated levels of the neurotransmitter histamine in the blood. Symptoms of undermethylated depression include OCD tendencies, Seasonal Affective Disorder (SAD) and competitiveness or perfectionism. Dr Walsh says undermethylation is the dominant chemical**
- **imbalance found in 20 per cent of people diagnosed with psychosis.**
- **20 per cent showed folate deficiency. Symptoms of this type of depression include sleep disorders, low libido and a tendency to high anxiety and panic.**
- **17 per cent showed copper overload. According to Dr Walsh, 95 per cent of high-copper depressives are women**
- **and onset tends to occur during a hormonal event such as puberty, pregnancy or menopause.**
- **5 per cent of patients showed toxic metal overload. This condition is linked to unrelenting depression with no obvious emotional triggers or traumatic causes, as well as a metallic taste in the mouth or bad breath.**

director of the Gold Coast's SAFE Analytical Laboratories, which offers UKA testing, asserts that this is the only definitive way to diagnose pyroluria.

"We conduct the test under National Association of Testing Authorities [NATA] accreditation and under a Therapeutic Goods Administration [TGA] licence," she explains. "Many of the doctors are pleased that we have been successful in gaining NATA accreditation because that validates our test method and renders it a credible scientific test."

Dyne adds, "I am very passionate about both the test and the subsequent treatment protocols. It is such a joy to know that people, particularly children, are able to access such wonderful help as that administered by Dr Bill Walsh."

### CAUSES & CONTROVERSY

Pyroluria is widely believed to be an inherited condition and can be triggered by episodes of severe stress. Kylie Seaton says other factors can also cause the condition.

"It is commonly seen as a genetic, or inborn, error of pyrrole metabolism; however, it can also result from exposure to heavy metals, toxic chemicals or porphyria [an enzyme disorder]," she explains.

"This basically means that conditions

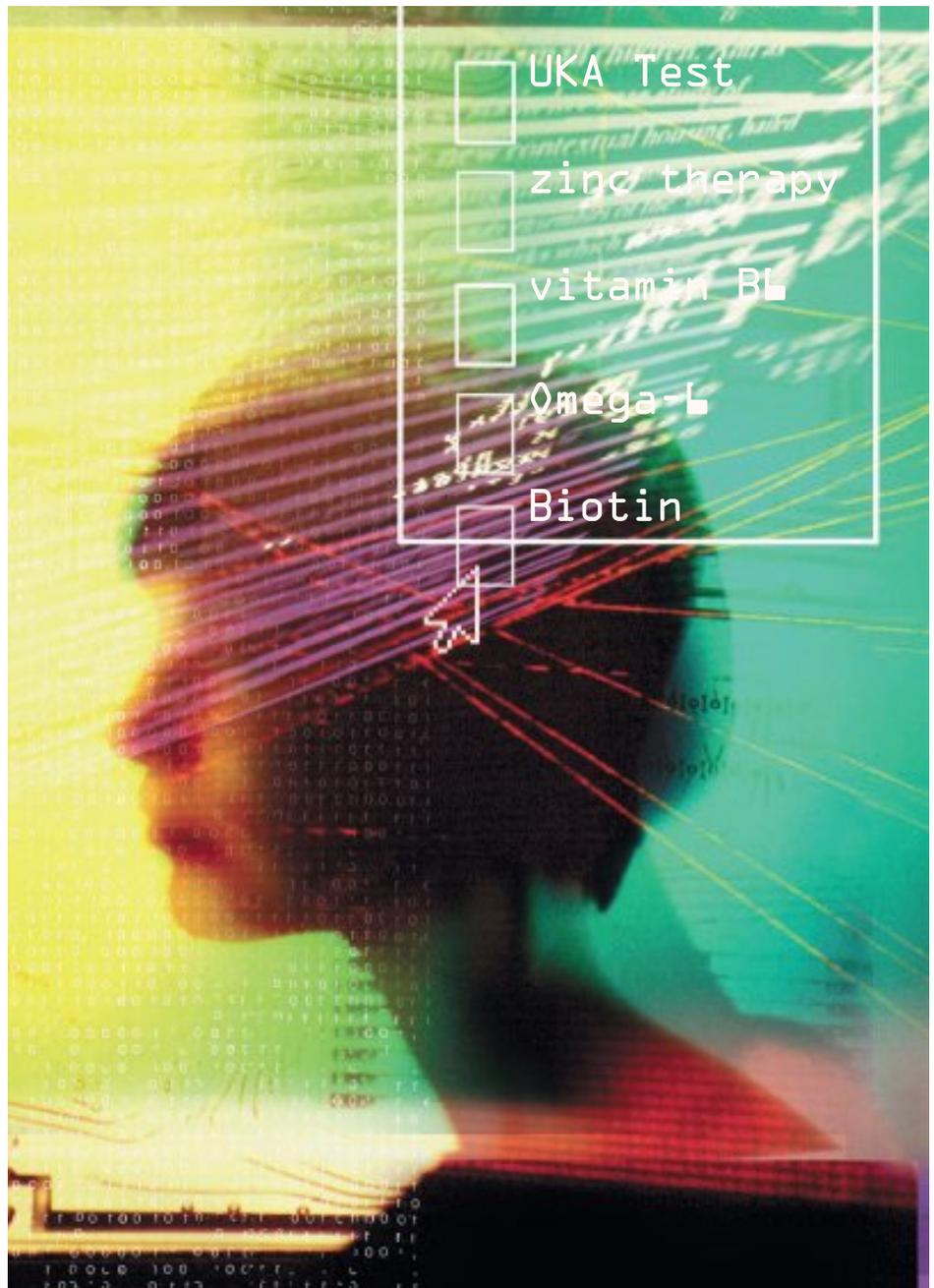
## Pyroluria is the abnormal synthesis of haemoglobin, the oxygen-carrying molecule in the blood.

or circumstances that expose the body to extremes of oxidative damage can lead to pyrrole disorders such as pyroluria."

She says some practitioners have also reported seeing pyroluria in severe cases of Lyme disease — a bacterial infection spread by ticks — as well as other infections that can impact metabolic function, but there is currently no scientific evidence to support this.

Perhaps surprisingly, given the abundance of research supporting its existence, diagnosis and treatment of pyroluria are still largely the domain of alternative health practitioners. The condition is rarely considered by orthodox medicine in the context of diagnosing and managing depression; in fact, most referrals for urinalysis are made by naturopaths and other orthomolecular (nutrition-focused) practitioners.

"The condition received a lot of attention from the 1950s through until the 1980s and a few researchers, like Walsh, really pushed for the link between pyroluria and



schizophrenia, bipolar disorder, depression and anxiety symptoms to be made," says Seaton. "There is still a lot of interest in the condition from the alternative mainstream medical community and complementary practitioners. I think it is becoming more widely recognised and some GPs who attend nutritional training courses are starting to take an interest in it."

Self-medicating, even with vitamin supplements, can be dangerous, so an official diagnosis is essential. Carolyn Broomfield's diagnosis came after she was referred by a naturopath for urinalysis. "After many years of seeing GPs, not once was a test done for pyroluria," she says.

Broomfield now sees a holistic GP who has continued to help her refine and

manage the treatment initially prescribed by her naturopath.

### TURN THAT FROWN UPSIDE-DOWN

According to a 2010 pilot study led by Dr Walsh and published in the journal of the Australasian College of Nutritional & Environmental Medicine, targeted nutrient therapy as the most effective treatment for pyroluria.

Dr Walsh's team prescribed a 12-month nutrient therapy program for 382 patients with a range of mental illnesses including autism, bipolar disorder, depression, anxiety and obsessive compulsive disorder (OCD). The treatment program included zinc therapy; pyridoxine and pyridoxal-

5-phosphate (vitamin B<sub>5</sub>) and omega-6 supplements such as primrose and borage oil; and the water-soluble B vitamin, biotin.

Of the patients who completed the program, almost 45 per cent experienced major improvement and a further 18 per cent reported partial improvement. In a comparison group of patients that did not receive nutrient therapy, more than 60 per cent reported no improvement in their condition.

"Depending on the cause of the pyroluria, other antioxidant and anti-inflammatory supplements can also help," says Seaton. "Epigenetic factors [the study of heritable changes in gene expression] will play a role in this as well, so dietary, lifestyle and environmental factors need to be addressed."

She says improvements are often felt within a few days of beginning treatment, though it can take up to a month to achieve its full effect. Ongoing nutrient therapy must be carefully monitored and "tweaked" when necessary.

Carolyn Broomfield says it has taken trial and error to find the right blend of nutrients to manage her pyroluria.

"The high doses of zinc made me very nauseous, so it was a matter of getting the formula and brand right and eating at the right times," she explains.

"It was frustrating at times. I keep up to date with my supplements at all times. This is challenging because I get sick of having to take so many tablets but my GP is mindful of this and selects supplements that are multipurpose and easy to swallow."

Nearly two years on from her diagnosis, Broomfield says she now feels "strong, fit



**Targeted nutrient therapy is the most effective treatment for pyroluria.**

and healthy". In addition, she says, "Having a diagnosis has made understanding myself so much easier. I no longer suffer from many of the symptoms, especially insomnia and mood swings.

"There must be so many people out there who are sick, untreated and wrongly

medicated, but pyroluria can be treated without drugs." ☺

**Laura Greaves is an award-winning freelance writer who specialises in health and wellbeing. Find out more at [www.lauragreaves.com](http://www.lauragreaves.com).**

## "I NO LONGER NEED ANTIDEPRESSANTS"

**Forty-two-year-old Queenslander Paul Martin\* struggled with depression for more than 20 years before his search for alternative answers led to a pyroluria diagnosis.**

**"I was first told that I had depression when I was about 20. Constant anxiety, fatigue and erratic behaviour were all part of the mix.**

**"I was constantly striving for new, better and bigger things, which led to people thinking of me as an overachiever or adventurer instead of just someone who was incredibly wired.**

**"Antidepressants were recommended but I chose not to go down that path. From about the age of 14 I used alcohol to self-medicate, although 10 years of cognitive behavioural therapy (CBT) and lots of self-discipline and mindfulness were probably better for me.**

**"It was only after my wife experienced postnatal depression with the birth of our first child that I realised I needed to put pride aside and give the medication a go so that I could better support my family.**

**"I tried a couple of different antidepressants, and they were**

**awesome, [but] I was aware that, biologically, they couldn't be doing anything other than masking other symptoms. The underlying causes remained unaddressed. I figured I had about 50 years left to live and it was worth taking a chance on an alternative.**

**"I did some research and discovered the work of Dr William Walsh, which led me to a nutritional medicine doctor in Brisbane. I didn't know much about pyroluria so I approached it as an experiment and my doctor was very supportive of that approach. The questions**

**he asked about my family history made very clear the physiological connection with behavioural patterns.**

**"Depression and anxiety hinder good thinking and that includes getting in the way of deciding to get help.**

**"It's been almost two years since my pyroluria diagnosis and I have been off antidepressants for about two months. I take prescribed doses of nutrients, which are revised every three months.**

**"I feel fine, and that's enough."**

**\* Name has been changed.**